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READY RESERVE FORCE: WEST COAST ACTIVATIONS IN SUPPORT OF OPERATION DESERT SHIELD

by

Phillip R. Kessler

March 1991

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Ready Reserve Force: West Coast Activation In Support Of Operation Desert Shield

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Submitted in partial fulfillment
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ABSTRACT

The Ready Reserve Force (RRF) is a key element of the United States' strategic sealift capability. The Maritime Administration (MARAD) maintains RRF vessels in five-, ten- and 20-day readiness status to provide responsive shipping in support of military operations worldwide in time of conflict. This thesis investigates the initial nine RRF vessels activated by MARAD Western Region in support of Operation Desert Shield. Problems encountered in the areas of condition at the time of breakout, engineering, crew, workforce resources available for breakout, parts and stores, and bunkering are discussed for each vessel. In addition, several prior activations of RRF vessels are discussed and then compared to the activations for Operation Desert Shield. Recommendations for future activations are made.

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LIST OF ABBREVIATIONS

ABS.....American Bureau of Shipping
COI.....Certificate of Inspection
COTP.....U.S. Coast Guard Captain of the Port
EPA.....Environmental Protection Agency
GA.....General Agent
MARAD.....Maritime Administration
MOU.....Memorandum of Understanding
MSC.....Military Sealift Command
MSCPAC.....Military Sealift Command, Pacific
MV.....Motor Vessel
NDRF.....National Defense Reserve Fleet
OCMI.....Coast Guard Officer In Charge, Marine Inspection
PDT.....Pacific Daylight Time
RO/RO.....Roll-On Roll-Off
RRF.....Ready Reserve Force
SS.....Steam Ship
USCG.....United States Coast Guard
USNS.....United States Naval Ship

I. INTRODUCTION

A. PURPOSE

The main purpose of this thesis is to investigate the activation of Ready Reserve Force (RRF) vessels in support of Operation Desert Shield. It will analyze the problems encountered during the activation process and attempt to make recommendations useful in avoiding similar problems in the future.

B. SCOPE

The RRF was established in November of 1976, as a subset of the National Defense Reserve Fleet (NDRF), to maintain certain vessels in the NDRF in a higher state of readiness to provide the nation with strategic sealift capability. The RRF is maintained by the Maritime Administration (MARAD) in three regions, the East Coast, West Coast, and Gulf Coast. As of January 10, 1991, 65 RRF ships and two NDRF ships had been activated or were being activated to support Operation Desert Shield. This thesis was begun in late August 1990 and due to time limitations will concentrate on the RRF vessels that were activated prior to the end of August 1990. Although RRF vessels from all three regions were activated to support Operation Desert Shield, this thesis will only study those vessels activated in the Western Region due to location and

availability of information. This thesis will also include past activations of Western Region RRF vessels as a source of comparison with current activations.

C. METHODOLOGY

The methodology of this thesis is the study of reports and messages from the organizations involved in the RRF activations as well as information from other sources such as interviews, government publications, Congressional hearings, and past theses from the Naval Postgraduate School and the Army Command and General Staff College. Information from these sources was assembled to form a thorough study of the topic using the most current information available.

D. ORGANIZATION

This thesis is divided into five chapters. Chapter I serves as an introduction to the thesis. Chapter II provides background information about the RRF and the process for activation of RRF vessels. Chapter III analyzes current activations in support of Operation Desert Shield with an emphasis on the problems encountered in the following six areas: condition at breakout, engineering, crew, workforce resources available for breakout, parts and stores, and bunkering. Chapter IV first discusses problems encountered in a prior simultaneous activation of three Western Region RRF vessels. It then discusses past activations of three vessels

from the previous chapter using the same six areas of discussion. Chapter V analyzes the problems encountered during the activations discussed in the previous two chapters. It also compares problems in past activations with those of the current activations and provides recommendations drawn from the information discussed in the thesis.

II. BACKGROUND

Mobilization of military forces during a time of national emergency requires the movement of vast quantities of cargo to the area of conflict. The fact that sealift capability is a vital source for transporting military cargoes during time of conflict is reflected in the following:

> The overwhelming bulk of tonnage supporting ground troops in an overseas theater of operations must come from ocean transport. This has been true of every conflict since the War of 1812... The Military Airlift Command...and Civil Reserve Air Fleet...are assets of irreplaceable value in the initial stages of war, but they are dwarfed by the total tonnage requirements necessary to sustain armies, navies and air forces throughout a sustained conflict. [Ref. 1:p. 85]

During a time of national emergency 95 percent of all U.S. military cargoes must be transported by sea with the other five percent transported by air. [Ref 2]

This chapter will briefly discuss the sources of strategic sealift available during time of conflict. It will then discuss the purpose of the RRF and describe the activation/deactivation process for RRF vessels.

A. SOURCES OF STRATEGIC SEALIFT CAPACITY

The sources of strategic sealift capacity are the Military Sealift Command (MSC), Ready Reserve Force (RRF), U.S. Flag Merchant Fleet, Effective U.S. Control Fleet, National Defense

Reserve Fleet (NDRF), Allied Shipping, and Angary. Each of these sources is briefly described below. [Ref. 3]

1. Military Sealift Command

Vessels available for strategic sealift controlled by the Military Sealift Command (MSC) include prepositioned ships, ships under long-term charters, and specialized government-owned ships kept in a reduced operational status. [Ref. 3]

2. Ready Reserve Force

The RRF is a fleet of strategic sealift vessels held in reserve for quick-response situations. A detailed description of the purpose of the RRF and the activation process for RRF vessels is provided in Section B below.

3. U.S. Flag Merchant Fleet

During mobilization in time of conflict, all U.S. flag vessels can be requisitioned for strategic sealift use. Vessels receiving government subsidies are available to MSC upon request as described below:

> All U.S. flag vessels that receive, or have received federal subsidies, such as Construction Differential Subsidies...or Operational Differential Subsidies...funds, and 50 [percent] of the capacity of any U.S. operator's fleet that carries military cargo under MSC contract, are parties to the Sealift Readiness Program (SRP). This program is administered by MSC, and all vessels in the SRP are available to MSC upon request, under conditions short of mobilization. [Ref. 3:p. 11]

4. Effective U.S. Control Fleet

Vessels that are owned by the U.S., but registered under foreign flags, are called the Effective U.S. Control Fleet. These vessels are requisitionable assets for use in strategic sealift. [Ref. 3:p. 12]

5. National Defense Reserve Fleet

The NDRF is made up of older vessels that can be activated in time of national emergencies for both military and nonmilitary shipping crises. Activation times for NDRF vessels is significantly greater than for vessels in the RRF. [Ref. 4]

6. Allied Shipping

In the case of general war with the Soviet Union, the U.S. would expect strategic sealift support from NATO countries.

7. Angary

Angary is a last resort method of obtaining sealift assets. It is described below:

> Angary is a practice in customary international law, also authorized in U.S. law, whereby belligerent states may exercise the power of requisition over neutral ships, but not crews, in their territorial waters. [Ref 3:p. 14]

It is not likely that the U.S. would use this method to obtain strategic sealift assets.

B. READY RESERVE FORCE

The RRF is a component of the NDRF. It is composed of vessels having the most military value, maintained in an advanced state of readiness for quick activation in time of national conflict. The RRF program was established in November of 1976 and is administered by MARAD. [Ref. 5:p. 41] As of September 1, 1990, the RRF consisted of 96 vessels [Ref. 6]. The Maritime Administration states the purpose of the RRF as follows:

> The Ready Reserve Force (RRF)...has grown to represent a significant portion of the U.S. early deployment capability. the Department of Defense (DOD) has determined that there is a need for a Ready Reserve Force composed of approximately 142 inspected and certified oceangoing ships of various types and classes, capable of full operational status within [five], [ten], or 20 days following notification. The RRF is a key element of the Navy's Strategic Sealift Program designed to provide assured, responsive shipping to support the rapid worldwide deployment of U.S. military forces. It is structured for quick response (ship availability) beyond that readily obtainable from U.S. commercial shipping. [Ref. 7:p. 1]

The Maritime Administration maintains RRF vessels in a five, ten or 20 day readiness status through the use of memoranda of understanding (MOU) with the American Bureau of Shipping (ABS) and the U.S. Coast Guard (USCG). In addition to these MOU's, each RRF vessel has an American-flag ship management company acting on behalf of MARAD as the Ship Manager or General Agent (GA) for the vessel during all phases of RRF activities [Ref. 7].

C. RRF ACTIVATION/DEACTIVATION PROCESS

Vessels in the RRF can be activated on either a No-Notice or Service basis. All of the RRF activations in support of Operation Desert Shield were No-Notice activations. MARAD tries to activate each RRF vessel a minimum of once every five years for at least 30 days. In addition to ensuring that machinery remains operational, the activations give maritime personnel experience operating the older equipment found on RRF vessels. [Ref. 1:p. 119]

The classification for the readiness category which each vessel is in takes into account the age and condition of the vessel, the preservation method used during deactivation and lay-up, and the results of ABS surveys conducted during lay-up. This determines whether a vessel is placed in the five-, ten-, or 20-day readiness category. [Ref. 8:p. 7]

A seven phase program was developed by MARAD to satisfy the five-, ten-, or 20-day activation requirements. The seven phases are as follows:

- Phase I Acquisition
- Phase II Upgrade
- Phase III Deactivation
- Phase IV Maintenance
- Phase V Exercise
- Phase VI Sealift Enhancement Features
- Phase O Operation

The Upgrade, Deactivation, Maintenance, Exercise, and Operation phases of the activation and deactivation process are the most relevant to the topic of this thesis and are described below. Detailed information concerning those phases not covered below is contained in references seven and eight. Appendices A and B list the surveys and inspections required by ABS and USCG respectively, along with their periodicities.

1. Phase II - Upgrade

a. ABS Procedures

During this phase, vessels that are not ABS classed undergo required surveys and conversions as necessary. For vessels that are ABS classed the following applies:

> Existing ABS classed vessels will undergo surveys and repairs necessary to ensure that the vessel is capable of steaming continuously in unrestricted operations for at least 180 days in execution of its assigned sealift mission. [Ref. 8:p. 2]

All major surveys due within one year of assignment to RRF status are conducted during this phase. Appendix A lists all surveys conducted by ABS and their periodicity.

Each vessel is drydocked during this phase for survey and repairs. During drydocking the following is to be accomplished:

- Sea chests and sea valves to be opened for examination and coating.
- Anchor chains to be ranged and gauged.

- Plating below waterline is to be ultrasonically gauged in accordance with the requirements of the next Special Periodic Survey of Hull.
- Underwater body to be specially cleaned and coated in accordance with MARAD's current specifications for vessels entering long term lay-up.
- Portable blanks are to be prepared for fitting over underwater openings.
- Marks are to be placed on the vessel's bottom and side shell plating to facilitate orienting divers when carrying out Underwater Inspection In Lieu of Drydocking Survey. These are to include specific areas of plating, sea openings, propeller blade surfaces, and rudder surfaces.
- Provisions are to be made to the stern tube bearings and their sealing arrangements in accordance with current MARAD specifications for the anticipated long term lay-up.

[Ref. 8:p. 2]

b. USCG Procedures

During the upgrade phase the USCG ensures that the vessel may be safely operated as intended in accordance with applicable laws, rules, and regulations by verifying that it meets the requirements for Certificate of Inspection (COI). If the vessel's COI will expire within one year after being assigned to the RRF, MARAD shall request that the USCG conduct an inspection for certification. [Ref. 7:p. 2]

2. **Phase III - Deactivation**

a. ABS Procedures

During the deactivation phase, the ABS ensures that the Ship Manager properly prepares the vessel for lay-up. Vessels are to be prepared for active retention as follows:

- Dehumidification systems capable of maintaining the relative humidity at 38 to 41 percent are to be installed in the following locations:

    a. Engineroom, steering gear spaces and workshop.
    b. Living quarters, navigation spaces, galleys, and storerooms.
    c. Motor generator control spaces.
    d. Other spaces deemed appropriate.

- A suitable cathodic protection system for the hull is to be fitted.

- Suitable systems to detect flooding and sound an alarm are to be installed in the engineroom, shaft alley and any other spaces considered appropriate.

- The hull, decks, deck houses, machinery and equipment are to be lubricated, painted or otherwise preserved as required to assure the they do not deteriorate during extended periods of inactivity and exposure to weather. Exterior openings, including uptakes are to be covered or otherwise effectively sealed against weather.

- Cargo gear including booms, blocks, runners, etc. are to be properly painted, preserved and stowed to minimize the harmful effects of non-use and exposure to the elements.

- Plating in way of the last two frame spaces in the shaft alley including the tank top, bilge well and the after peak bulkhead up to the top of the sterntube is to be specially scaled, gauged if necessary, and coated with an appropriate preservative.

[Ref. 8:pp. 2-3]

b. USCG Procedures

When a vessel is placed in lay-up in the deactivation phase, the Coast Guard Officer in Charge, Marine Inspection (OCMI) takes custody of the COI and maintains a file containing the COI, copies of all requirements (CG-835) issued to the vessel, and other applicable correspondence concerning that vessel. [Ref. 7:p. 2]

3. Phase IV - Maintenance

The Maintenance phase is for the period when the RRF vessel is in lay-up. The requirements of this phase are meant to ensure that equipment is preserved in the best condition possible during the extended period of idleness. The periodic surveys and inspections listed in Appendices A and B are designed to operate and test the major machinery. In addition to the periodic surveys and inspections required by ABS and USCG, the following actions are taken during the maintenance phase:

- Preventive maintenance and repair procedures are to be developed and employed during this phase to ensure the systematic exercising, maintenance, inspection and testing of the various systems and equipment. Appropriate records of the maintenance and tests carried out are to be maintained by MARAD/GA and are to be available to ABS upon request.
- The hull, deck, deck houses and appurtenances are to be routinely inspected by MARAD/GA and maintained in a good state of preservation and appearance.
- Cargo handling equipment is to be periodically operated by MARAD/GA to verify its readiness. The equipment is to be periodically represerved as required to maintain it in good state of preservation.
- Hatch covers are to be periodically inspected, operated and repaired as necessary to ensure a good state of preservation, weathertight integrity and operational status.
- The vessels will be maintained in accordance with applicable ABS, Coast Guard and other regulatory requirements. MARAD/GA will arrange for required periodic inspections and surveys.

[Ref. 8:pp. 3-6]

4. Phase V - Exercise

When directed by the Chief of Naval Operations, MARAD initiates the activation of RRF vessels. When it receives notice to activate a vessel, MARAD notifies its regional and field offices, Ship Managers/General Agents, seafaring union headquarters, Reserve Fleet sites, and inspection organizations via telephone. The Ship Manager/General Agent is responsible for manning the vessel. This is done through the specific unions which the Ship Manager/General Agent has made arrangements with. The unions contact the individual mariners to fill the billets on each ship. [Ref. 9]

a. Ship Manager Duties

The duties of the Ship Manager/General Agent include the following:

- Procure the ship's Master, subject to the National Shipping Authority's approval, as an agent and employee of the U.S. government.
- Procure and make available to the Master, for engagement by him, the officers and crew required.
- Equip, victual, supply, and repair the vessel.
- Develop activation specifications in coordination with MARAD Cognizant Regional Director and Ship Operations Officer.
- Hire tugboats and pilots and pay canal tolls.
- Appoint part agents at all ports for husbanding the ship.
- Relay voyage instructions directly to the Master, as may be required.

- Assist, as required, in obtaining all appropriate and applicable certification and documentation for the ship, all necessary shipping documents, and all necessary port and harbor information.

[Ref. 9:p. 30]

b. ABS Duties

The ABS ensures that all necessary surveys and tests are conducted during the activation process so that the vessel will be able to conduct sustained operations for at least 180 days. Each RRF vessel activated during the exercise phase is required to conduct a full power and sea trial. The ABS Surveyor will witness the operation of all of the vessel's equipment and systems to verify satisfactory operation. [Ref. 8]

c. USCG Duties

When MARAD is directed to activate RRF vessels it notifies the OCMI the shipyard at which the vessel will be activated, and whether it is in a five-, ten- or 20-day readiness status. The OCMI makes sure that deficiencies are corrected and conducts various safety inspections as follows:

- Conducts a deficiency check to ensure that outstanding requirements issued during the Phase IV Maintenance period have been corrected. Deficiencies that cannot be corrected because of time constraints to meet operational requirements of the DOD may be deferred until after the activation provided no serious deficiencies remain which would affect the seaworthiness or safety of the vessel and its personnel.
- Conducts operational testing of equipment and systems as required for reissuing of the COI including testing of

fire pumps, steering motors, generators, safety valves, relief valves, fire hoses, liferafts, lifejackets, etc.

- Upon correction of any outstanding requirements, testing of vital systems, and/or issuance of any waivers, the OCMI will deliver the COI.

[Ref. 7:pp. 3-4]

5. Phase O - Operation

When the vessel successfully passes all surveys and inspections it is tendered to MSC for operational control. MARAD is still responsible for maintaining the vessels in ABS class and Coast Guard certification during this phase even though the vessel is under MSC operational control. [Ref. 7:p. 4]

6. Activation Reports

Several reports are produced during and following the activation of RRF vessels. During the activation, MARAD produces Situation Reports (SITREPS) every six hours. When the activation is completed, MARAD combines these SITREPS to produce a Quick Look Report. After the vessel has completed its operations and operational control has been returned to MARAD, MSC produces an After Action Report which discusses problems from the exercise and operation phases. The Ship Manager/General Agent produces voyage reports at the completion of the operation phase.

III. ACTIVATION OF READY RESERVE FORCE SHIPS

This chapter will examine the problems encountered during the activations of the first nine RRF vessels from the MARAD Western Region activated in support of Operation Desert Shield. The discussion of each vessel will begin with a brief description of that vessel and its condition when ordered to be broken out. The major problems from the activations are then discussed in the following areas:

- Condition at breakout.
- Engineering.
- Crew.
- Workforce resources available for breakout.
- Parts and stores.
- Bunkering.

A. ACTIVATION OF COMET

The COMET is an ex-USNS C3-ST-14a design Roll-On Roll-Off (RO/RO) vessel with steam propulsion. It was built in 1958 and was placed into the RRF in March of 1985. Since it was an ex-USNS vessel, MSC was responsible for the COMET's deactivation procedure before placement in the RRF, and MARAD had less control over its material condition when it was turned over. As a result, the COMET was in fairly rough

condition when it was placed in lay-up. The COMET was never activated until Operation Desert Shield. [Ref. 10]

The Ready Reserve Force Status Report from MARAD stated that at the time of breakout, "COMET requires combustion control repairs." [Ref. 11:p. 6]

The COMET was located at Swan Island, Portland, Oregon, at the time of activation in a five-day readiness status. Western Region Headquarters of the Maritime Administration received notification to activate the COMET at 0615 PDT on August 10, 1990. The ship manager for the COMET is American President Lines and the activation yard was Cascade General. The COMET was in a nest of ships at the time of activation and was moved to working pier 305. Two other ships in the same nest were activated simultaneously with the COMET. Due to the fact that the COMET was the last ship to leave the berth, it did not leave the berth until 2000 PDT August 10, 1990. The COMET was conditionally tendered to Military Sealift Command at 0330 PDT on August 25, 1990. The activation process took a total of 14 days, 21 hours, and 15 minutes. The following problems were experienced during the activation of the COMET: [Ref. 12]

1. Condition At Breakout

a. Gauges

Many pressure gauges and thermometers were missing or broken. A large number of the gauges that were present

were uncalibrated. Electrical meters were also unreliable due to lack of calibration. It is crucial that a crew unfamiliar with an engineering plant have reliable gauges when trying to light off. [Ref. 12:p. 2]

b. Lighting

Missing or burnt out light bulbs and electrical shorts resulted in the lighting system throughout the ship being out of order at the start of the activation. Good lighting makes the difficult task of tracing systems less complicated. The recommendation was that, "The Phase IV should ensure that all lighting systems are fully functional." [Ref. 12:p. 2]

c. Frozen Starboard Scoop Valve

The ABS survey reports showed that the starboard scoop gate valve was a new valve that had been installed at lay up. The valve was found to be frozen after removing the underwater blank. This frozen valve resulted in conditional acceptance by MSC. The ship manager was able to use divers to free the valve when the ship made a call in Los Angeles for other repairs. The lesson learned from this was, "Do not remove any blanks until you are sure the valve is free." [Ref. 12:p. 4]

d. Salt Water Service System

A damage control plug in the suction side left over from when the sea chests were painted prior to blanking was

causing insufficient flow in the salt water service system. [Ref. 12:p. 4]

e. Gaskets

The packing material in valves throughout the system were dried out from the dehumidification phase causing the valves to leak. The dried out packing material caused normal corrective action, taking up on the gland, to be ineffective in most cases. Whenever the boiler was shut down unexpectedly, as many valves as possible were completely repacked. [Ref. 12:p. 6]

f. Manuals

Instruction books essential for activation were missing. Without instruction books, some operations had to be accomplished on a trial and error basis. There was only one operating manual aboard. The recommendation was that, "It should be the practice to insure at least three (3) copies be aboard and where possible plastic coated copies of systems piping diagrams." [Ref. 12:pp. 2-3]

g. Sounding Tubes

Some sounding tubes were plugged or mislabeled in both the fuel oil and ballast systems. Unreliable sounding tubes resulted in refueling by opening manholes for sounding. The fill and suction lines for number five deep tank were completely shut. Investigation revealed that the tank had been blanked for an air test and repairs to the tank tip, and

the blanks were never removed after the work was completed. The following recommendation was made:

> In regards to sounding tubes, a verification should be made as part of Phase IV. Bottom soundings should be made of all tanks and checked against the design tube lengths as proof of clear tubes. In addition, plastic coated listings should be available of sounding tube locations so that when a green crew comes aboard they have useful information to work from. It would be helpful to have color coded areas of deck painted in way of the tubes to assist in locating them. Vent terminals on deck should also be color coded and marked as to what tank they serve. Most label plates have been painted over or are gone. [Ref. 12:p. 4]

h. Reach Rods

Several reach rods were mislabeled. In order to correct the problem several ballast tanks had to be dumped. [Ref. 12:p. 4]

i. Bilge Wells

The bilge wells were full of debris and scale throughout the ship. The recommendation was that:

> They should be maintained in a clean condition and at some time after initial dehumidification, hammered to drop as much scale into the rosebox as possible and re-cleaned. [Ref. 12:p. 6]

j. Keys

There was no key locker or individual keys for any accommodations or store rooms. There were about four master keys aboard the vessel. The lack of keys led to several cases of theft of personal effects and ships stores being brought aboard. The recommendation was that, "Arriving crew members must have some place to stow their gear." [Ref. 12:p. 3]

k. Galley Equipment

Galley equipment is very important to successful activation.

> I cannot emphasize strongly enough the absolute need to get habitability up and running early in the activation. This is not only from a cost viewpoint but from the essential morale viewpoint. [Ref. 12:p. 5]

Due to the condition of drains, potable water, and steam for dishwashers, the galley could not be used to cook a meal for the crew until August 17.

l. Mattresses

All of the mattresses on the ship had to be replaced. An American President Line representative ordered new mattresses and within 36 hours enough were aboard to support the crew of 35. [Ref. 12:p. 5]

m. Air Conditioners

At the start of the activation 15 spaces were air conditioned using portable window units which were found to be unreliable. When some of the crew members arrived they threatened to walk off the ship unless they had proper quarters including air conditioning. In order to satisfy the requirement, 33 window-type air conditioning units were ordered and placed aboard. [Ref. 12:pp. 5-6]

n. Ice Makers

There were two ice makers aboard and both had to be replaced. [Ref. 12:p. 6]

o. Ventilation In The Quarters

Ventilation in the quarters and cargo holds was unsatisfactory. Oscillating fans for the quarters were found in a locker and had to be installed along with some that had to be purchased. [Ref. 12:p. 6]

2. Engineering

a. Combustion Control

A contractor was in the process of completely renewing the combustion control system when activation was ordered. Although the contractor finished the work by late the second day, the combustion control system could not be adjusted until the boilers were steady steaming. The lack of proper adjustment of the combustion control system resulted in imperfect combustion control during light off and start up. [Ref. 12:p. 3]

b. Emission Control Regulations

The initial inspection of the boilers showed clean fire side and superheater tubes and recent brick repairs. Local rules in the Port of Portland prohibiting blowing of tubes in port led to major casualties in the boilers.

> After initial light off and several days of steaming, we lost the boilers due to soot buildup across the air heaters of both boilers and bridging across the superheater of the port boiler. As a result, the engine room became increasingly obnoxious because of numerous casing leaks. As long as there was no back pressure, the leaks were not apparent. During this period, we had a fire in the inner casing around the registers which ultimately burnt a hole through the casing floor. It took approximately 48 hours to effect necessary repairs which

included air cleaning the starboard boiler, and after smoke bombs, repairs to the casings. The port boiler required a thorough water washing followed by smoke bombs and casing repairs and a slow fire to dry out the boiler prior to bringing it on line. The local rules prohibit blowing of tubes in the Port of Portland and we knew that with combustion problems we could be in further difficulty. We prevailed upon CDR Kasky, the C.O. of MSC to use his influence with the EPA quality control people. Within an hour, we had the necessary waiver to permit unlimited soot blowing after dark and if necessary during daylight. [Ref. 12:p. 3]

c. Steam Regulating Valves

Steam regulating valves were a continuing problem starting at light off. The problem was intensified due to a lack of technical help from the start. Clogged steam strainers and scale in the steam lines led to substantial work and continuing problems. Lighting off and bringing the plant on the line cannot be accomplished without properly operating regulators and control valves. [Ref. 12:p. 6]

d. Emergency Diesel

Once minor start-up problems were corrected the emergency diesel appeared to be operating properly. Blow by was discovered after substantial use in a loaded condition and the diesel had to be overhauled in Los Angeles. It was recommended that, "In the future we should, at some point, take compression readings as a minimum to ascertain the condition of the diesel." [Ref. 12:p. 6]

3. Crew

No significant problems in this area were encountered.

4. Workforce Resources Available For Breakout

a. Skilled Labor

During a massive breakout, such as that in support of Operation Desert Shield, the availability of skilled labor is a general problem. This was especially true at Cascade because they had two commercial tankers under repair at the time of activation. [Ref. 12:p. 7]

b. Divers

Some time was lost during the activation because with three ships being activated in the same port there were not enough divers to provide services simultaneously to the three ships. [Ref. 12:p. 7]

5. Parts And Stores

a. Vessel Un-inventoried

The fact that the vessel was un-inventoried was a major problem until the job of storekeeper was manned on an around the clock basis. Most of the parts needed for the activation were found aboard, although it was difficult at first to tell what parts were available aboard. MSC will try to replace those parts used from on board spares with spares still in existence for this vessel on the East Coast. [Ref. 12:p. 2]

b. Lack Of A Pre-Set Stores List

Each department ordered what it thought it needed because there was no pre-set stores list. Since time was

short they ordered what they thought they needed without looking to see what was aboard. It was recommended that:

> At some point a check should be made and at inactivation materials, such as tools, etc., removed and placed in a safe place for future use on any activation. If we leave it aboard, it will be lost. [Ref. 12:p. 5]

6. Bunkering

Bunkering is a term for refueling. No significant problems in this area were encountered.

7. Summary

The COMET was not successfully activated within the required five day time limitation. Numerous engineering problems caused major delays in the activation process. The COMET had not been activated since it was placed in the RRF, and the length of time spent in lay-up caused a great deal of deterioration in the engineering spaces, especially to gaskets. Steaming the boilers with newly installed combustion control equipment and without blowing tubes caused problems resulting in several days of delays.

B. ACTIVATION OF SS CAPE ISABEL

The SS CAPE ISABEL is a C7-S-95a design RO/RO vessel with steam propulsion. It was built in 1976 and was placed in the RRF in June of 1986. CAPE ISABEL was fairly new, and in fairly good condition when it was placed in the RRF. CAPE ISABEL was never activated until Operation Desert Shield. [Ref. 10]

The Ready Reserve Force Status Report stated that at the time of breakout, "CAPE ISABEL requires ballast control system repairs." [Ref. 11:p. 6]

CAPE ISABEL was located at berth 306, Swan Island, Portland, Oregon, at the time of activation in a five day readiness status. Western Region Headquarters of the Maritime Administration received notification to activate the Isabel at 0615 PDT on August 10, 1990. The ship manager for the Isabel is American President Lines and the activation contractor was North West Marine. The Isabel was in a nest of ships at the time of activation and was moved to working pier 301. The CAPE ISABEL was tendered to Military Sealift Command at 1425 PDT on August 22, 1990 [Ref. 13]. The activation process took a total of 12 days, eight hours, and ten minutes. The following problems were experienced during the activation of the CAPE ISABEL: [Ref. 14]

1. **Condition At Breakout**

a. Gaskets

The gaskets and packing material in the machinery spaces were in unexpectedly deteriorated condition at the time of activation. The condition of the gaskets and packing material was most likely caused by the dehumidification process. All deteriorated gaskets and packing material were replaced. [Ref. 14:p. 3]

b. Ballast System

Continuous repairs were made to the controls and valves of the ballast system throughout the activation process. Although the problems were thought to be corrected at the time the ship left for sea, it was later learned that they persisted. [Ref. 14:p. 3]

2. Engineering

a. Superheater Header Handhole Gaskets

Superheater header handhole gaskets leaked during boiler hydro testing. These gaskets had been renewed during the lay up process and appeared to be tight when air tested to 100 PSI. The boilermakers furnished and renewed all superheater gaskets. [Ref. 14:p. 2]

b. Salt Water Service System

Several leaks were discovered throughout the salt water service system when it was started. The most substantial problem was a leak in a four-inch evaporator feed line. This feed line was made of PVC from the ship's original construction. After repeated unsuccessful attempt to repair leaks in the same joints, copper nickel lines were installed and the system was placed into service. This problem, including a salt water service pump which became flooded and had to be rewound, resulted in three days delay in engineering plant operations. [Ref. 14:p. 2]

c. Unable To Raise Steam Pressure Above 100 PSI

A problem raising steam pressure above 100 PSI was experienced during one of the boiler light offs. A sounding of the starboard fuel oil settling tank revealed a clear liquid on the sounding tape. This clear liquid may have caused improper combustion resulting in the difficulty raising boiler pressure. This clear liquid may have been lube oil, hydraulic oil, water or a mixture of any of these. Removing this contamination from the tank solved the problem. [Ref. 14:p. 2]

d. Blocked Fuel Oil Heaters

Both of the fuel oil heaters were blocked. The apparent cause for the blockage was solidified fuel. The heaters were cleared by soaking with solvent and circulating solvent through them. [Ref. 14:p. 2]

e. Unable To Clean Baskets Of Duplex Strainer

The fuel oil duplex strainer could not be isolated to allow cleaning of one of the baskets of the strainer. The strainer was disassembled twice to determine why one side of the strainer could not be isolated from the other to allow debris to be cleared from the basket. The problem was found to be a valve plug that was over-traveling on both sides preventing either side from being isolated from the other. Repairs were made to the valve plug and the duplex strainer was put into operation. [Ref. 14:p. 2]

f. Feed Pumps

A joint in the feed pump suction line failed and had to be repaired. After the repairs were completed, the cover gasket blew out on the idle feed pump. The main feed stop-check valve on the idle pump was found to be leaking which caused the cover gasket to blow out. The main feed stop-check valve was repaired and the cover gasket on the idle feed pump replaced. [Ref. 14:p. 3]

g. Relief Valves

Three relief valves were found to be blowing by and had to be removed for repairs. These relief valves were from the 35 PSI steam system, the DC heater shell, and the Butterworth heater. [Ref. 14:p. 3]

h. Aft Turbine Generator

The aft turbine generator had a wiped thrust bearing which had to be replaced. [Ref. 14:p. 3]

i. Forward Turbine Generator

The output from the forward turbine generator could not be brought above 1,000 KW. An adjustment in the electronic governor inside the hydraulic power supply assembly solved the problem. [Ref. 14:p. 3]

j. Evaporators

Both of the evaporators were problems from beginning to end of the activation. The evaporators were opened and hydro-tested when it was discovered that SS JUPITER

was experiencing problems with her evaporators (see section F below). The hydro-tests revealed no leaks in the evaporators. It was difficult to maintain the temperatures and the amount of evaporator feed water when operating the evaporators. The problem was found to be insufficient pressure from the feed pumps to the evaporator eductors. Increasing this pressure solved the problem. [Ref. 14:p. 3]

3. Crew

The delay in some of the crew arriving, especially engineering personnel, caused delay in the activation process. [Ref. 14:p. 3]

4. Workforce Resources Available For Breakout

This was the first RRF activation that North West Marine performed and some delay was caused by the contractor's inexperience. [Ref. 14:p. 3]

5. Parts and Stores

No significant problems in this area were encountered.

6. Bunkering

No significant problems in this area were encountered.

7. Summary

The activation of the CAPE ISABEL was not completed within the required five-day time limitation. The CAPE ISABEL had never been activated since it was placed in the RRF. The extended lay-up period was most likely the cause of the

deteriorated condition of the engineering plant which lead to numerous delays.

C. ACTIVATION OF MV CAPE EDMONT

The MV CAPE EDMONT is a class G-0 design foreign construction RO/RO vessel with diesel propulsion. It has a controllable pitch propeller, bridge control and bow and stern thrusters. The CAPE EDMONT was built in 1971 and was placed in the RRF in April of 1987. The CAPE EDMONT was well used and was in very rough condition when it was reflagged. An extensive, ten-month reflagging procedure and a lot of work by MARAD over the past three years to improve the CAPE EDMONT'S condition resulted in fair condition at the time of breakout. A service activation of CAPE EDMONT was ordered in February of 1988, but was canceled by MSC the same day. It was never activated again since being placed in the RRF. [Ref. 10]

The Ready Reserve Force Status Report stated the following about the condition of CAPE EDMONT at the time of breakout:

> CAPE EDMONT requires repairs to [starboard] 18 [ton] deck crane damaged by failure of drum clamps during ABS Annual Cargo Gear Survey. [Ref. 11:p. 6]

The CAPE EDMONT was located at Swan Island, Portland, Oregon, at the time of activation in a five-day readiness status. Western Region Headquarters of the Maritime Administration received notification to activate the CAPE EDMONT at 0615 PDT on August 10, 1990. The ship manager for the CAPE EDMONT is Interocean Management Corporation and the

activation yard was Cascade General. The CAPE EDMONT was conditionally tendered to Military Sealift Command at 1720 PDT on August 23. The activation process took a total of 13 days, 11 hours and five minutes. The following problems were experienced during the activation of the CAPE EDMONT: [Ref. 15]

1. Condition At Breakout

Fuel in bunker and service tanks was contaminated at the time of breakout. The contaminated fuel caused major problems with clogging in fuel strainers for the main engines and generators. The fuel was consolidated and stripped into a holding tank and offloaded. [Ref. 16]

2. Engineering

a. Aft Ship's Service Diesel Generator (SSDG)

Contaminated fuel was found to be the cause of difficulties experienced while trying to start the aft SSDG. Disposal of the contaminated fuel resolved the problem. [Ref. 15:p. 1]

b. Fuel Line

After leaving for sea trials a fuel oil line failed, spilling fuel oil in the engineroom. This fuel oil spill caused the ship to return to the pier for repairs and cleanup of the oil. [Ref. 15:p. 2]

3. Crew

The CAPE EDMONT was activated in 13 days, 11 hours and five minutes. The activation process could have been shortened by several days if an experienced crew had been available at the time of activation. One example is that the ship was on its own power in the morning of August 12th with oilers standing watches because no engineers had reported aboard yet. The lack of engineering personnel eventually caused the postponement of dock trials scheduled for the afternoon of August 12th. [Ref. 15:p. 1]

a. Master

The Master was inexperienced on this type of vessel, and his uncertainty led to delays in the activation. The Quick Look report on the activation stated:

> The Master had never sailed on, let alone commanded, a motorship with a controllable pitch propeller, bridge control, and bow and stern thrusters. Compounding the problem, even with four tugs alongside, he was unwilling to take bridge control, as is required on this ship, and 'get the feel' of how it handles. Rather than working with the Ship Manager's port engineer, the MARAD Surveyor and the various tech reps, he ran to the USCG every time he perceived a problem. The steady flow of misinformation he provided the local COTP was a major factor in the many hours of delays, and the requirement to flat tow the vessel over 80 miles down the Columbia River to the seabouy before sea trials could commence. [Ref. 15:p. 2]

b. Chief Engineer

The Chief Engineer did not arrive until August 13. The Chief Engineer's late arrival and inexperience hindered the activation process. The Quick Look report reported:

> The Chief Engineer had no experience with this type of plant and was not of the caliber necessary to ensure rapid breakout and effective operation of the ship. [Ref. 15:p. 3]

c. Vessel Crew

The entire crew was inexperienced with this type of vessel, especially the engineers. The engineers' unfamiliarity with the engineering plant was a prominent problem throughout the activation. To try and overcome this problem the Western Region of MARAD suggested,

> That consultant engineers be hired from the vessel's former owners to assist in activation, sea trials and at least the first voyage. [Ref. 15:p. 2]

This suggestion, however, met with a great deal of opposition.

The difficulty in manning the vessel in a timely manner caused many delays in the activation process. It is likely that even if the vessel had been in perfect material condition it would not have been ready for sea trials at the beginning of day five due to lack of personnel.

4. Workforce Resources Available For Breakout

No significant problems in this area were encountered.

5. Parts And Stores

No significant problems in this area were encountered.

6. Bunkering

MSCPAC required the vessel to bunker full prior to leaving for sea trials. This requirement meant that key personnel had to be taken away from other jobs relating to the activation for the bunkering operation. This requirement for

full bunkering prior to sea trials caused additional fatigue to an already weary crew. [Ref. 15:p. 3]

7. **Summary**

The CAPE EDMONT was not successfully activated within the required five-day time limitation. Although the vessel had not been activated since it was placed in the RRF in 1986, the main cause of delays in activation were caused by personnel and not machinery. Lack of experience with the foreign built engineering equipment on the part of the crew and shipyard personnel alike caused many delays in the activation process.

D. ACTIVATION OF METEOR

The METEOR is an ex-USNS C4-ST-67a design RO/RO type of ship with steam propulsion. The METEOR was built in 1967 and was placed in the RRF in October of 1985. Like the COMET, the METEOR was turned over to MARAD by MSC. Since MSC was responsible for the deactivation, MARAD was unable to provide a work list of items to be corrected prior to being placed in the RRF. The result was that METEOR was in rough condition when placed in the RRF. The METEOR was never activated until Operation Desert Shield. [Ref. 10]

The Ready Reserve Force Status Report stated that at the time of breakout, "METEOR may be limited to single shaft operations and max speed of 12 [knots]." [Ref. 11:p. 6]

The METEOR was located at ex-Todd Shipyard (inactive), San Pedro, California at the time of activation in a five day readiness status. Western Region Headquarters of the Maritime Administration received notification to activate the METEOR at 0615 PDT on August 10, 1990. The ship manager for the METEOR is Interocean Management Corporation and the activation yard was Southwest Marine, San Pedro, California. The METEOR was activated at a shipyard berth and was docked at Southwest Marine at 1430 PDT on August 10. The METEOR was tendered to Military Sealift Command at 0100 PDT on August 25. The activation process took a total of 14 days, 18 hours, and 45 minutes. The following problems were experienced during the activation of the METEOR: [Ref. 17]

1. **Condition At Breakout**

a. Burner Management System

A new burner management system was purchased before the vessel was laid-up and placed in the RRF. This burner management system was not installed when the vessel was placed in the RRF. At the time of breakout the burner management system was installed, but was not completely tested. This problem is further discussed below (see section 2 b.).

b. Pipes And Valves

Pipes and valves for many systems were in unusable condition at the time of breakout. This problem is further discussed below (see section 2 a.).

2. **Engineering**

a. Pipe And Valve Renewal

Pipes and valves in many systems required renewal. These systems included the following: sanitary, fresh water, exhaust steam and drain piping, fuel oil filling lines, shower fixtures, diesel cold start, toilet bowls, and sink faucets in quarters. [Ref. 17:p. 2]

b. Burner Management System

A General Regulator burner management system was purchased for the vessel by MSC prior to relinquishing control to MARAD for use in the RRF. This burner management system, later found in a cargo hold, was installed in 1989. [Ref. 17:p. 2]

Simulated tests were performed on the burner management system after installation, but light off of the boilers to properly test the system was cost prohibitive. Upon light off for the activation it was discovered that the new system had both factory and installation defects which took ten days for Medland Controls to fix in order to make the system reliable. [Ref. 18]

c. Emergency Switchboard

A bonnet gasket on a block valve failed during testing of a fire line. The leak caused considerable damage to the emergency switchboard. It was recommended that,

The valve and line should not run through the emergency diesel generator room; this line should be rerouted at first opportunity. [Ref. 17:p. 2]

d. Shaft Vibration

Shaft alignment problems on the port main engine caused heavy vibrations during shaft speeds of between zero and 25 RPM. The vibrations diminished at speeds above 25 RPM and could no longer be noticed above 40 RPM. It was recommended that the shaft problem should be investigated and corrected upon completion of this voyage. [Ref. 17:p. 2]

3. Crew

Key crew members were late in reporting which overloaded the Interocean Management Corporation Port Engineer in his attempts to expedite the activation. Personnel problems were compounded when the first Chief Engineer walked off the ship after four days, and the second Chief Engineer quit after five days. The Chief Engineer who eventually sailed with the ship did not arrive until two days before the voyage. [Ref. 17:p. 2]

4. Workforce Resources Available For Breakout

No significant problems in this area were encountered.

5. Parts And Stores

No significant problems in this area were encountered.

6. Bunkering

The requirement to bunker the vessel full during the activation and prior to sea trials added 24 hours to the

activation. The increased workload this requirement placed on an already fatigued crew resulted in the loss of 24 to 30 hours of productivity from the crew. [Ref. 17:p. 2]

7. Summary

The METEOR was not successfully activated within the required five day time limitation. The METEOR had never been activated since it was placed in the RRF in 1985. The extended time in lay-up was most likely the cause of the deteriorated condition of engineering equipment, especially valves and piping systems. The burner management system which had not been installed before the vessel was placed in lay-up was the major cause of delay in the activation process. The burner management system accounted for ten days delay in activation.

E. ACTIVATION OF MV CAPE DUCATO

The MV CAPE DUCATO is a G-1 design foreign construction RO/RO type of vessel with diesel propulsion. It has a controllable pitch propeller, bridge control, and bow and stern thrusters. It was built in 1972 and was placed in the RRF in December of 1985. The CAPE DUCATO was activated in January of 1986 for exercise Team Spirit '86, and in February of 1988 for exercise Team Spirit '88 [Ref. 18]. The CAPE DUCATO was in fair condition the last time it was deactivated. [Ref. 10]

The Ready Reserve Force Status Report stated that at the time of breakout,

> CAPE DUCATO main engines require testing and run-in limiting speed to 16 [knots] for first 72 hours of operation due to replacement of major engine components. [Ref. 11:p. 6]

The CAPE DUCATO was located at ex-Todd Shipyard (inactive), San Pedro, California at the time of activation in a five day readiness status. Western Region Headquarters of the Maritime Administration received notification to activate the CAPE DUCATO at 0615 PDT on August 10, 1990. The ship manager for the METEOR is Interocean Management Corporation and the activation yard was Wilmington Iron Works, Wilmington, California. The CAPE DUCATO was activated at the layberth. Activating the CAPE DUCATO at the layberth saved at least four hours that would have been required to move it to an active shipyard. The CAPE DUCATO was conditionally tendered to Military Sealift Command at 1400 PDT on August 24. The total activation time was 14 days, seven hours and 45 minutes. The following problems were experienced during the activation of the CAPE DUCATO: [Ref. 19]

1. **Condition At Breakout**

The condition of key engineering equipment was unknown at the time of breakout. The main engines and evaporators had not been operated under a load since 1988. At the time of activation the condition of the machinery for these systems was unknown. At breakout it was not known that the injection

timing on the main engines had been advanced during the previous activation to compensate for worn out and broken fuel oil pumps. When the main engines were operated unloaded they appeared to be working properly. Only after a load was placed on the main engines were the problems discovered (see section 2 c. below). [Ref. 18]

2. Engineering

a. Reduction Gear Lube Oil Pump

The removal, repair, and replacement of a reduction gear lube oil pump caused a one day delay in sea trials. [Ref. 19:p. 3]

b. Swedish Plant

The engineering plant was a Swedish design and none of the engineers had ever operated that type of plant previously. Until a Swedish engineer was found to act as a consultant, the engineers had to learn the plant as they went along. This caused approximately a one day delay during sea trials. [Ref. 19:p. 3]

c. Fuel Delivery System

This was the most substantial problem during the activation. The quick look report reported:

> Fuel delivery problems to the main engines were catastrophic to the activation, with the failed first sea trial delaying the delivery of the vessel two days. Engine loads would not balance and overheat conditions indicative of timing and injection problems forced the ship to return to San Pedro for repairs. During repairs many problems were found with the fuel pumps and injection nozzles, from poor settings to broken internal parts.

> Repairs were made, and timing and delivery was reset to benchmark. During this time the PEC system [Pielstick Engineering Control electropneumatic control system attached to the governors of the three main engines to balance the load between them] was completely cleaned out and air signals balanced. This delay for repairs cost us three days. [Ref. 19:p. 3]

d. Evaporator

The evaporator could not be tested until the problems with the main engines were corrected. This was due to the evaporator using engine jacket water from the main engine to heat the evaporator feed water. Once the evaporator was tested it could not produce water due to scale in the tubes and low vacuum. This problem was the reason for the conditional acceptance by MSC and resulted in one day delay in activation. [Ref. 19:p. 4]

3. **Crew**

a. Engineers

The Chief Engineer and a Third Assistant were on the Maintenance Team for a year prior to the activation and their knowledge of the plant was very beneficial during the first few days of the activation. Unfortunately, this knowledge did not carry over to operating the plant under a load where unfamiliarity with the characteristics of the plant led to many time consuming mistakes. The G-1 type of plant is complicated to operate and it was difficult to learn at the time of activation.

The rest of the licensed engineers were completely inexperienced with this type of plant and did not start arriving until the third day of the activation. The delay in reporting for the licensed engineers delayed switching to ship's power due to lack of watchstanders. This delay eventually led to a dock trials delay of two days. [Ref. 19:p. 2]

b. Radio Officer

The Radio Officer did not report until the fifth day of the activation. The multiple activations throughout the country in support of Operation Desert Shield had drained the supply of personnel.

4. Workforce Resources Available For Breakout

No significant problems in this area were encountered.

5. Parts And Stores

No significant problems in this area were encountered.

6. Bunkering

No significant problems in this area were encountered.

7. Summary

The CAPE DUCATO was not successfully activated within the required five day time limitation. Although the CAPE DUCATO had been activated in 1986 for exercise Team Spirit '86 and in 1988 for exercise Team Spirit '88, it still experienced major engineering problems during the activation. It appears that the injection timing on the main diesel engines was

advanced to make it operate for the previous activation to compensate for worn out and broken fuel oil injection pumps. The unknown condition of the engineering plant at the time of activation lead to major problems with the fuel delivery system and the Pielstick Engineering Control system. Inexperience with the foreign built engineering equipment also led to delays in the activation.

F. ACTIVATION OF SS JUPITER

The SS JUPITER is a C7-S-95a design RO/RO type of vessel with steam propulsion. It was built in 1976 and was placed in the RRF in April of 1986. The JUPITER is an ex-MSC vessel and had never been activated since being placed in the RRF. It was in fair condition when it was deactivated. [Ref. 10]

The Ready Reserve Force Status Report from MARAD stated at the time of breakout that, "JUPITER requires modifications to combustion control and ballast control systems." [Ref. 11:p. 6]

The JUPITER was located at the Blair Waterway, Tacoma, Washington, at the time of activation in a five day readiness status. Western Region Headquarters of the Maritime Administration received notification to activate the JUPITER at 0615 PDT on August 10, 1990. The ship manager for the JUPITER is American President Lines and the activation yard was Todd Shipyard, Seattle, Washington. The JUPITER was towed to Todd Shipyard and arrived at 0400 PDT on August 11. The

JUPITER was tendered to Military Sealift Command at 2330 PDT on August 19. The total activation time was nine days, 17 hours and 15 minutes. The following problems were experienced during the activation of the JUPITER: [Ref. 20]

1. Condition At Breakout

a. Location

The vessel's location at the time of breakout caused a delay in the activation process. Towing the ship from layberth to the shipyard took 21 hours and 45 minutes. [Ref. 20:p. 2]

b. Salt Water Pumps

Many salt water pumps were in deteriorated condition from the time of previous service. [Ref. 16]

c. Evaporators

At the time of breakout, the evaporators were in deteriorated condition either from improper lay-up or deficient condition at the time of lay-up. The problem with the evaporators is further discussed below (see section 2 a.). [Ref. 16]

2. Engineering

a. Evaporators

(1) Problems With Number One Evaporator. The following problems were encountered on the number one evaporator and were repaired prior to completion of the sea trial:

- Blown first stage air ejector steam inlet line.
- Rear first stage spray tower eroded at bottom of tubes and leaked at the cap.
- Second stage distillate leaking through window gasket.
- Tube bundle interior gasket not lined up properly between first and second stages.
- Suction side of the brine pump broken.
- Header gasket not properly lined up.
- Air ejectors were leaking.
- First stage feed heater leaking.
- Brine gate between stages improperly set.
- Missing disc on two inch swing check from air ejector.
- Drain line installed upside down and disc adrift in valve for feed heater drain line.
- Discharge check valve adrift in valve for distiller pump.

[Ref. 20:p. 2]

(2) Problems With Number Two Evaporator. The number two evaporator unit was found to have ten leaking tubes in the condenser. The Leslie first stage heater drain line blew in two places when the unit was started due to a return valve that was plugged solid. These problems were repaired and the unit placed in operation. [Ref. 20:p. 3]

b. Other Problems Causing Delays

The following are engineering problems that arose unexpectedly during the activation:

- Blown gaskets on fuel oil and D.C. heater relief valves.

- Metal particles found in strainers for number one and number two air conditioning compressors resulted in rebuilding both units.
- Boiler safety stuck open during setting of safety valves for USCG required replacement.
- Salt water ballast valves and pneumatic operators were a great problem.
- Fisher control valves and Leslie regulators deteriorated internally.
- Throttle valves to the number one and number two turbine generators were difficult to open under steam pressure.
- Transformer burned up for number one main circulation pump.
- In port boiler feed pump had heavily scored plungers and no special chevron packing was available locally.
- Main condenser loop seal rusted through.
- Steam line to port boiler sootblowers blew out.

[Ref. 20:p. 2]

c. Electric Motors

Two fuel oil service pumps, a fuel oil transfer pump, and two main condensate pumps were electrically grounded and had to be sent to a shop ashore. [Ref. 20:p. 3]

d. Feed Line Discharge Check Valves

The bonnet gaskets started leaking on the main boiler feed pump main and auxiliary feed line discharge check valves. Repairs required the plant be secured for several hours. [Ref. 20:p. 3]

e. Hydraulic Amplifiers

The plug-in wiring to the sending units for hydraulic amplifiers were likely damaged by yard workers blanking off a steam line to both turbine generators. This problem was not detected until an attempt was made to start the units. [Ref. 20:p. 3]

3. Crew

No significant problems in this area were encountered.

4. Workforce Resources Available For Breakout

No significant problems in this area were encountered.

5. Parts And Stores

No significant problems in this area were encountered.

6. Bunkering

The requirement to bunker the vessel during the activation phase and prior to sea trials caused the loss of 12 hours due to taking key personnel away from other activation work. This also added to the fatigue of an already weary crew. [Ref. 20:p. 3]

7. Summary

The JUPITER was not successfully activated within the required five day time limitation. The JUPITER had never been activated since placement in the RRF. The extended lay-up period is the most likely cause of the numerous engineering problems which cased delay in the activation. Towing the

vessel from layberth to the shipyard also caused a delay of almost a full day.

G. ACTIVATION OF MV CAPE HORN

The MV CAPE HORN is a G-2 design foreign construction RO/RO type of vessel with diesel propulsion. It was built in 1979 and was placed in the RRF in December of 1986. The CAPE HORN was activated in January of 1987 for exercise Team Spirit '87, and in April of 1989 for exercise Cobra Gold '89. The CAPE HORN was in fairly good condition at the time of breakout since it had just completed the deactivation procedure. [Ref. 10]

The CAPE HORN was located at berth 6 and 7 North Pier, Hunters Point, San Francisco, California at the time of activation in a five day readiness status. Western Region Headquarters of the Maritime Administration received notification to activate the CAPE HORN at 0615 PDT on August 10, 1990. The ship manager for the CAPE HORN is Interocean Management Corporation and the activation yard was Southwest Marine, San Francisco, California. The CAPE HORN was activated at the layberth which saved at least four hours towing time. The CAPE HORN was tendered to Military Sealift Command at 1410 PDT on August 16. The total activation time was six days, seven hours and 55 minutes. The following problems were experienced during the activation of the CAPE HORN: [Ref. 21]

1. Condition At Breakout

The plan for activation and the specifications, provided by the ship manager, were not current. Without a current activation plan, guidelines for the activation had to be drawn up on site as each problem occurred. [Ref. 21:p. 2]

2. Engineering

No significant problems in this area were encountered.

3. Crew

a. Full Manning

The full crew was not aboard until August 15. Obtaining licensed officers was the major problem causing the delay in full manning. Key personnel, including licensed engineers and deck officers, were slow to arrive on board. The lack of key personnel resulted in delayed light off of the engineering plant and the diesel generators. [Ref. 21:p. 2]

b. Inexperience With Ship Type

The crew was new to this particular ship and had only limited experience on this type of vessel. The ship is foreign designed and none of the crew had ever sailed on a vessel like it before. The crew's inexperience made it difficult to operate the equipment. [Ref. 21:p.2]

4. Workforce Available For Breakout

a. Port Engineer

A great deal of difficulty was experienced with the Port Engineer for the ship manager. The quick look report noted that,

> The Port Engineer representing the ship manager, IOM (Interocean Management Corporation), probably is a well qualified individual for any vessel under normal circumstances, but was not suitable during the activation period because he was not familiar with the ship. The Port Engineer has not been on this type of vessel. This resulted in many inefficiencies in activating the vessel effectively. The activation was managed solely by one full-time port engineer on-site with no back-up assistance to relieve him at night. As a result planning and scheduling suffered and fatigue affected performance and judgement. Long hours with an inexperienced crew compound the problem. [Ref. 21:p. 2]

b. Repair Facility Personnel

Due to the nature of the nationwide activation of the RRF, technical representatives were in short supply. Experienced technicians with skills necessary to work on critical equipment were not available on short notice. Technicians that were available were unfamiliar with the foreign-built equipment and could not provide expeditious assistance in activating the vessel. Insufficient numbers of shipyard personnel were available to provide for the needs of the activation on an around the clock basis. For the first three days of the activation full support and cooperation was received from the shipyard, but it began to slip after that. Limited support and supervision was provided after day four. The shipyard personnel had limited experience with the foreign

built vessel. This was especially noted in the area of electrical equipment. [Ref. 21:p. 2]

c. Coast Guard Inspectors

The MARAD representative noted that the USCG inspectors were overly thorough with their inspection requirements. This was evident from the quick look report which stated that,

> USCG inspectors insisted on inspecting every piece of machinery, going thoroughly through automation tests; picking on every detail and demanding to see every bit of the test procedure and checking all spaces during the activation period, regardless of the condition and status of the vessel. [They had no] understanding that this is a Ready Reserve Force Vessel and has been [in] lay-up [since] only last year. [They were] not willing to make any allowance for the new crew members or the officers. A total of three full days (24 hour day) was devoted using all manpower to accommodate the USCG deck and engine inspectors. A day and a half was spent on the main engine automation which did not prove anything for the vessel except delaying the vessel from sailing and completing the mission. Both inexperienced deck and engine inspectors are detailing us to death without any consequence of the actual vessel seaworthiness. [Ref. 21:p.3]

5. Parts And Stores

Parts and material for the foreign built vessel were not readily available in the United States to support repairs. Time was lost while many parts were shipped from Europe. [Ref. 21:p. 3]

6. Bunkering

The requirement to bunker the vessel during the activation phase and prior to sea trials caused delays due to taking key personnel away from other activation work. This

also added to the fatigue of an already weary crew. Additional delay was experienced when MSC had a problem getting the fuel delivered in San Francisco on short notice. [Ref. 21:p. 3]

7. Summary

The activation of the CAPE HORN exceeded the five day time limitation by about one and a third days. The Cape HORN was activated on the East Coast and then transferred to the West Coast for exercise Team Spirit '87, and was also activated in 1989 for exercise Cobra Gold '89. Due to the vessel's recent activation, the engineering plant was in good condition. The major delay in activation was manning. The full crew was not aboard until five days after the start of the activation. The other problem was the fact that the crew and shipyard personnel were not experienced with the foreign-built engineering equipment.

H. ACTIVATION OF SS CAPE BRETON

The SS CAPE BRETON is a C4-S-66a design breakbulk type of vessel with steam propulsion. It was built in 1967 and was placed in the RRF in May of 1985. The CAPE BRETON was in good condition when it was placed in the RRF. At the time of breakout it was in the best overall condition of all breakbulk vessels in the Western Region RRF. The CAPE BRETON was activated in September of 1987 for exercise Kernel Blitz 87-2. [Ref. 10]

The CAPE BRETON was located at Pier 2, Hunters Point Naval Shipyard, San Francisco, California at the time of activation in a five day readiness status. Western Region Headquarters of the Maritime Administration received notification to activate the CAPE BRETON at 1308 PDT on August 19, 1990. The ship manager for the CAPE BRETON is American President Lines and the activation yard was Service Engineering Company, San Francisco, California. The CAPE BRETON was activated at its layberth. The CAPE BRETON was tendered to Military Sealift Command at 1630 PDT on August 25. The total activation time was five days, four hours and 52 minutes. The following problems were experienced during the activation of the CAPE BRETON: [Ref. 22]

1. **Condition At Breakout**

No significant problems in this area were encountered.

2. **Engineering**

Only minor problems were experienced in the engineering department during the activation. These problems included refractory repair in the starboard boiler, some repairs to the engine room automation, and resetting the overspeed trips on both of the Ship Service Turbine Generators. [Ref. 22:p. 2]

3. **Crew**

No significant problems in this area were encountered.

4. Workforce Resources Available For Breakout

The CAPE BRETON and the CAPE BORDA (section I below) were activated alongside each other, simultaneously, by the same contractor. During the activation some personnel and equipment were used on both ships. This sharing of personnel and equipment caused some delays in the activation of both ships. Some of the key personnel had just completed the activation of SS JUPITER and were fatigued from the outset. This may have added to time required for activation. [Ref. 21:p. 2]

5. Parts And Stores

No significant problems in this area were encountered.

6. Bunkering

No significant problems in this area were encountered.

7. Summary

The CAPE BRETON was successfully activated within the five day time limitation. The CAPE BRETON was in good condition when it was placed in the RRF, and had been activated in 1987 for exercise Kernel Blitz 87-2. There were no major problems during the activation.

I. ACTIVATION OF SS CAPE BORDA

The SS CAPE BORDA is a C4-S-66a design breakbulk type of vessel with steam propulsion. It was built in 1967 and was placed in the RRF in April of 1985. The CAPE BORDA was in good condition when it was placed in the RRF and at the time

of breakout. The CAPE BORDA was activated in January of 1987 for exercise Team Spirit '87. [Ref. 10]

The CAPE BORDA was located at Hunters Point Naval Shipyard, San Francisco, California at the time of activation in a five day readiness status. Western Region Headquarters of the Maritime Administration received notification to activate the CAPE BORDA at 1308 PDT on August 20, 1990. The ship manager for the CAPE BORDA is American President Lines and the activation yard was Service Engineering Company, San Francisco, California. The CAPE BORDA was activated at its outport location simultaneously with the activation of the SS CAPE BRETON. The CAPE BORDA was tendered to Military Sealift Command at 1500 PDT on August 26. The total time for activation was six days, one hour and 52 minutes. The following problems were experienced during the activation of the CAPE BORDA: [Ref. 23]

1. **Condition At Breakout**

No significant problems in this area were encountered.

2. **Engineering**

a. USCG Conditional Acceptance

MSC conditionally accepted the CAPE BORDA pending repair and proper operation of the following equipment:

- Turbine driven lube oil pump.
- Vacuum leaks on number one and number 2 evaporators.
- Governor on number two feed pump.

- Port forced draft fan controller.
- Feed water regulator on starboard boiler.
- Engine room data-logger.
- Leaks on main throttle block strainer.
- Two soot-blower motors.
- Satisfying USCG's 835 reports on number two SSTG overspeed trip, DC heater level indicator, shaft alley bilge alarm.

[Ref. 23:p. 2]

b. Valve Packing

Valve packing which had dried out during lay up was a continuing problem. The packing material had dried out due to the dehumidification process, and all deteriorated packing material had to be replaced. [Ref. 23:p. 2]

3. Crew

No significant problems in this area were encountered.

4. Workforce Resources Available For Breakout

The activation of seven other RRF ships two weeks prior had depleted the number of technical personnel. The simultaneous activation of two vessels at the same pier also stretched the shipyard personnel a little thin. This put an even greater burden on a crew inexperienced with the steam plant and break bulk function of the ship. They were required to learn the ship and operate it at the same time. [Ref. 23:p. 2]

5. **Parts And Stores**

No significant problems in this area were encountered.

6. **Bunkering**

No significant problems in this area were encountered.

7. **Summary**

The activation of the CAPE BORDA exceeded the five day time limitation by a little over one day. The CAPE BORDA had been activated for exercise Team Spirit '87 and had very few problems at that time. The long lay-up period is most likely the cause of the engineering problems experienced during the activation.

IV. PAST ACTIVATIONS

This chapter discusses past activations of Ready Reserve Force (RRF) ships in order to compare them with the West Coast activation of RRF ships in support of Operation Desert Shield. It first looks at the simultaneous breakout of the SS PRESIDENT, SS CALIFORNIA, and USNS NORTHERN LIGHT (January 1985) on a ship-by-ship basis. Individual activations of the SS CAPE BORDA (January 1987), SS CAPE BRETON (September 1987), and MV CAPE HORN (April 1989) are then discussed. Comparisons between the Operation Desert Shield activations discussed in the previous chapter and the past activations discussed in this chapter will occur in the following chapter.

The Chief of Naval Operations requested that COMSC initiate the simultaneous activation of three West Coast breakbulk ships on January 29, 1985. This was a no-notice activation with two of the ships to be used in support of exercise Team Spirit 85, and the third ship activated for test purposes only. The activation commenced at 1317 PDT on January 29, 1985 when MARAD was notified by MSC via telephone to activate SS PRESIDENT, SS CALIFORNIA, and SS NORTHERN LIGHT. All three of the vessels were in the RRF's five day readiness category at the time of activation.

A. ACTIVATION OF SS PRESIDENT

The SS PRESIDENT was broken out from Suisun Bay, California, on January 30, 1985 and towed to Triple A Shipyard, Hunters Point, San Francisco, California, for activation. The PRESIDENT was, by far, in the worst material condition of the three vessels at the outset of the breakout. The initial sea trial held on 4-5 February 1985 was unsuccessful and resulted in the PRESIDENT being adrift for approximately six hours and returning to Triple A Shipyard under flat tow. The second sea trial was successfully held on 8-9 April 1985. The president was tendered to MSCPAC on April 10, 1985 and was immediately retendered to MARAD. The following is an overview of the material condition of the PRESIDENT at the time of activation and major problems encountered during the activation: [Ref. 24]

1. Condition At Breakout

The initial impression of a MSC representative when he boarded the SS PRESIDENT on January 30, 1985 was that "She was far from being in satisfactory material condition [Ref. 25:p. 2]." Specific problems encountered due to the initial condition of the ship are discussed below.

a. Certificate Of Inspection

The vessel did not hold a current, valid certificate of inspection (COI) due to USCG requirements to replace boiler mounts and studs. A decision was made to hold

the sea trial without replacing the boiler mounts and studs in an attempt to get MSCPAC to accept the vessel conditional upon the completion of the replacement. The COI was not expected until four days after the planned completion of the initial sea trial when the boiler mounts and studs were going to be replaced. The vessel commenced sea trial without a COI. The first MSCPAC report on the activation noted:

> In light of the apparent condition of this vessel at the time of breakout, the presentation within five days (is) considered to have been forced and possibly unjustified. Further, conduct of a sea trial without COI is questionable. On subsequent breakouts, it is recommended that sea trials not be undertaken without valid COI. [Ref. 25:p. 4]

b. Fire Main And Ballast

There were numerous leaks in the fire main system during pressure tests, and the cargo hold bilges could not discharge ballast. The USCG inspectors required replacement of approximately 300 feet of fire main before the sea trial could commence. They also required that cargo hold bilge pumps be capable of discharging ballast. [Ref. 25]

c. Leaking Boiler Tubes

Leaking floor tubes in the starboard boiler were a major problem. Repairs to correct this problem were the primary factor in delaying the initial sea trial by two days. [Ref. 25]

d. Other Initial Condition Problems

The following is a list of other major problems at the time of breakout:

- Hull heavily encrusted and not in compliance with MSC standards (keel to deep water line was sand blasted prior to second sea trial).
- Hotel services such as showers, commodes and sinks inoperable (corrected prior to second sea trial).
- Communications station did not conform to requirements (corrected prior to first sea trial).
- Navigational equipment did not meet MSC requirements at breakout (corrected prior to first sea trial).
- Material/operational condition of ship's gantry crane questionable (crane was removed prior to second sea trial and not replaced).

[Ref. 26:pp. 4-6]

2. First Sea Trial

The first sea trail was unsuccessful due to major engineering problems. At approximately 0400 on February 5, 1985 the starboard boiler had to be secured due to a ruptured screen tube. The port boiler was secured at approximately 0700 due to water starvation. This left the vessel adrift approximately eight miles off the California coast and 30 miles south of the San Francisco entrance for six hours. The vessel had to be flat towed back to Triple A Shipyard. In addition to the boiler problems, other minor problems such as the ballasting of tanks were encountered. [Ref. 25]

3. Second Sea Trial

The second sea trial was successful and the vessel was tendered to MSC on April 10, 1985. The following problems were encountered and corrected during the second sea trial:

- Port boiler retractable soot blower would not automatically return to its original position.
- Forward feed pump overspeed trip malfunctioned requiring manual operation.
- Selector switch between primary and back up lube oil feed pumps malfunctioned causing governor to trip and temporary loss of plant.
- Lube oil feed pumps ceased operating causing loss of plant while testing emergency diesel for automatic starting.

[Ref. 26:pp. 3-4]

4. Suitability For Military Contingencies

After successful completion of the second sea trial, the PRESIDENT was tendered to MSC as a breakbulk, partially configured for containers, non-self sustaining vessel. The vessel's ability to meet military needs during a contingency were questioned even though it had successfully completed the sea trial.

> Although the second sea trial was successful, the material condition as regards metal surfaces of the container cells was unsatisfactory and not [in accordance with] MSC standards, being in significantly advanced stages of rust encrustation and weather/age deterioration. Additionally the condition of the removed container crane remained questionable as well as the plan of action for its replacement. Absence of this crane seriously degrades the vessel utility as an RRF asset. As noted [Ref. 24], even in a self sustaining configuration, the vessel is of

marginal utility in view of cargoes encountered during contingencies. [Ref 26:p. 6]

5. **Recommendation**

It was recommended that the SS PRESIDENT be removed from the RRF due to its limited ability to meet the needs of military contingencies [Ref 26:p. 6]. This problem was laid out in greater detail concerning the sizes and configurations of the vessel's cargo holds and cargo gear, and the recommendation was made that the vessel be removed from the RRF and placed in the NDRF [Ref. 27:pp. 2-3]. The final decision was that the SS PRESIDENT was removed from the five day readiness category of the RRF and placed in the 20-day readiness category.

B. ACTIVATION OF SS CALIFORNIA

The activation of the SS CALIFORNIA was nearly the opposite of that of the SS PRESIDENT (see section A above). The CALIFORNIA was broken out from a berth at Naval Supply Center, Oakland, California, on January 29, 1985 and towed to the Service Engineering Facility, Pier 36, San Francisco, California, for activation. The CALIFORNIA had been broken out for exercise Bold Eagle 84 the previous September through November so the General Agent and Service Engineering were both very familiar with the vessel. At the time of the breakout, the CALIFORNIA was being used as a training platform for a cargo handling battalion at the Naval Supply Center.

The vessel's recent service and use as a training platform led to exceptional material condition at the time of activation. The shipyard period of the activation process accounted for 66 hours of the five day breakout period. The sea trial was successfully completed on February 2, 1985 and the vessel tendered to MSC. The activation was completed within the five day readiness criterion.

The CALIFORNIA performed without breakdown throughout Team Spirit 85 and was turned over to MARAD on April 22, 1985 at the completion of the exercise. The following is a discussion of the few minor problems encountered during the activation: [Ref. 28]

1. Condition At Breakout

The vessel was in very good material condition at the time of breakout and there were only a few minor problems, all corrected prior to sea trial, that were encountered while preparing for sea trial. These problems included:

- Gasket blew on first stage heater header (yard tightened loose nuts).
- Cargo pump was removed to the shop for repairs.
- Number one evaporator brine pump sealing line leaked (yard repiped sealing line).

[Ref. 29:pp. 1-4]

2. Sea Trial

The CALIFORNIA's first sea trial was successful. During the sea trial, held on the first and second of February 1985, MSC tests on the main engines, auxiliary equipment, and steering engines were performed without any system failures and the vessel was tendered to MSCPAC on February 2, 1985. [Ref. 28:p. 2]

C. Activation Of SS NORTHERN LIGHT

The USNS NORTHERN LIGHT was broken out of the reserve fleet, Suisun Bay, California, on January 30, 1985 and towed to Todd Shipyard, San Francisco, California, for activation. American President Lines was appointed general agent for the NORTHERN LIGHT only a week prior to the breakout. The GA's unfamiliarity with the vessel had an impact on the activation, but the actual delay could not be quantified. The shipyard period of the activation process accounted for 72 hours of the five day breakout period. The time required to tow the vessel to the shipyard and the 24 hour sea trial made up the rest of the time. The sea trial was successfully completed on February 2, 1985, but the vessel was not tendered to MSCPAC until February 3, 1985 when cargo gear tests, not witnessed prior to sea trial, were completed. The activation was completed within the five day readiness criterion.

The NORTHERN LIGHT operated with exercise Team Spirit 85 and was turned over to MARAD on April 16, 1985 at the

completion of the exercise. The following is a discussion of the problems encountered during the activation: [Ref. 30]

1. Condition At Breakout

a. Blank Removal And Opening Doors

The greatest problem encountered during activation was the removal of blanks from the underside of the hull and the opening of sealed doors into the midship house. Although the removal of the blanks and opening of the doors was accomplished, it was made very difficult due to silicon sealant acting as an adhesive. [Ref. 30:p. 2]

b. Engineering

No problems in the engineering plant were encountered that caused delay in the activation. All minor engineering problems were repaired prior to sea trial.

2. Sea Trial

The sea trial was held on February 2 through 3, 1985. Successful MSC tests on the main engines, auxiliary equipment, and steering engine were accomplished with no engineering failures.

The only problem encountered during the sea trial was difficulty starting the lifeboat engine. This problem was not solved prior to completion of the sea trial. The certificate of inspection (COI) was not issued until this problem was resolved, and MSCPAC acceptance of the vessel was conditional

on repairs. On February 4, 1985 the problem was resolved and the COI was issued. [Ref. 31:p. 2]

D. RECOMMENDATIONS FROM ABOVE SIMULTANEOUS ACTIVATIONS

1. Periodic Steaming Of RRF Ships

The Commander, Military Sealift Command, Pacific made a recommendation aimed at solving the problem of RRF ships that did not have current COI's. This recommendation would involve periodic steaming of RRF ships in the five day readiness category to allow early identification of problems that would prevent activation within prescribed time limits.

> A program which would allow MARAD to maintain RRF 5 category vessels in class, e.g., interim periodic steaming of vessels (every six to 12 months) to facilitate early identification of problems which might invalidate the COI and allow repair(s) as required to retain in class and maintain the currency of the COI. [Ref. 27:p. 1]

The response to this recommendation was that although it was a valid recommendation, it would be cost prohibitive to implement such a program. The following alternative recommendation to solve the same problem was made by Commander, Military Sealift Command:

> Improved preventive maintenance programs implemented by MARAD, more stringent requirements for ships entering the RRF, and acquisition of newer, more reliable ships should help to alleviate problems of this nature. [Ref. 24:p. 1]

2. Workforce Resources Available For Breakout

The following observation was made by Commander, Military Sealift Command, Pacific, regarding the shipyard workforce available for simultaneous breakout of RRF ships at

the completion of the breakout of SS PRESIDENT, SS CALIFORNIA and USNS NORTHERN LIGHT:

> The ... breakout involved three ships being activated simultaneously. It was obvious at the outset that both government and commercial resources were insufficient to staff around the clock with requisite personnel. Many personnel worked over forty eight hours with but minimum rest. Efficiency and safe working practices diminished as the effort continued, in order to meet the five day criteria. Work on other ships, commercial and military charter, were impacted as resources assigned to those vessels were needed and diverted to meet the requirements of [all three vessels]. This included regulatory representatives such as USCG inspectors. It is apparent that simultaneous breakout of a larger number of ships will overwhelm local shipyard, regulatory, and GA resources. [Ref. 32:p. 2]

E. ACTIVATION OF SS CAPE BORDA

The SS CAPE BORDA is a C4-S-66a class breakbulk vessel with steam propulsion. It was located at Pier 38, San Francisco, California in a five day readiness status when it was activated for exercise Team Spirit '87. Western Region Headquarters of the Maritime Administration received notification to activate the CAPE BORDA at 1100 PDT on January 26, 1987. The general agent for the CAPE BORDA was American President Lines and the activation yard was Service Engineering Company, San Francisco, California. The CAPE BORDA was towed from its layberth to the shipyard for activation. The CAPE BORDA was tendered to Military Sealift Command at 0554 PDT January 31, 1987. The total time for activation was four days, 18 hours and 54 minutes. The

following problems were experienced during the activation of the CAPE BORDA: [Ref. 33]

1. Condition At Breakout

The CAPE BORDA was in good condition when it was acquired for the RRF. There were no major problems due to the vessel's condition at breakout. The quick look report had no major engineering problems which caused delay in activation to report. [Ref. 33]

2. Engineering

No significant problems in this area were encountered.

3. Crew

No significant problems in this area were encountered.

4. Workforce Resources Available For Breakout

Concerning the amount of personnel the shipyard had working on the vessel, the quick look report noted:

> Start up requires lots of mechanics and boilermakers crafts for maximum effort. Shipyards do not seem to grasp emergency situation requirements. [Ref. 33:p. 2]

5. Parts And Stores

The quick look report noted that a programming system needed to be developed for spare parts at hand. This indicates that when the crew arrived they were not sure what spare parts were available aboard. [Ref. 33]

6. Bunkering

No significant problems in this area were encountered.

7. Summary

The activation of the SS CAPE BORDA was successfully completed within the five day time limit. Even though the activation was a success, the quick look report noted:

> A hectic time to retest men and material [within the time limits of] the five-day activation...pushes men to exhaustion which is really not necessary and is, in our opinion, dangerous. We recommend, again, a return to the [five to ten] day activation in order to bring some sense to our efforts. [Ref. 33:p. 2]

F. ACTIVATION OF SS CAPE BRETON

The SS CAPE BRETON is a C4-S-66a class breakbulk vessel with steam propulsion. It was located at North Pier, Hunters Point Naval Shipyard, San Francisco, California in a five day readiness status when it was activated for exercise Kernel Blitz 87-2. Western Region Headquarters of the Maritime Administration received notification to activate the CAPE BRETON at 1445 PDT on September 9, 1987. The general agent for the CAPE BRETON was American President Lines and the activation yard was Service Engineering Company, San Francisco, California. The CAPE BRETON was activated at its layberth. The CAPE BRETON was tendered to Military Sealift Command at 0915 PDT on September 14, 1987. The total activation time was four days, 18 hours and 30 minutes. The following problems were experienced during the activation of the CAPE BRETON: [Ref. 34]

1. Condition At Breakout

The CAPE BRETON was in good condition when it was acquired for the RRF. Preventive maintenance performed during the vessel's inactive status made the activation process much easier. [Ref. 34]

2. Engineering

a. Hull Blanks

The removal of the hull blanks took much longer than normal. This was caused by difficult tidal currents at the activation berth. Divers had to fight these currents while removing the hull blanks. [Ref. 34]

b. Throttle Valve Governor

A problem with the vessel's throttle valve governor limited speed to 67 RPM during the sea trial. This problem could only be corrected after the sea trial and resulted in a conditional acceptance by MSCPAC. The problem was corrected and a full power run was conducted on the first voyage leg. This satisfied MSCPAC's requirements.

3. Crew

No significant problems in this area were encountered.

4. Workforce Resources Available For Breakout

The quick look report noted that the activation was "... very beneficial to [the] General Agent and two MARAD Marine Surveyors who learned more about activation of this ship's class [Ref. 34:p. 2]."

5. **Parts And Stores**

No significant problems in this area were encountered.

6. **Bunkering**

No significant problems in this area were encountered.

7. **Summary**

The activation of the CAPE BRETON was successfully completed within the five day time limitation. Even though removal of the hull blanks took much longer than normal, the activation of the major engineering systems was accomplished quickly without much hinderance.

G. ACTIVATION OF MV CAPE HORN

The MV CAPE HORN is a class G-2 RO/RO motorship. It was located at Pier 2, Hunters Point, San Francisco, California in a five day readiness status when it was activated for exercise Cobra Gold '89. Western Region Headquarters of the Maritime Administration received notification to activate the CAPE HORN at 0505 PDT on April 17, 1989. The ship manager for the CAPE HORN was Interocean Management Corporation and the activation yard was J & H Marine, San Francisco, California. The CAPE HORN was activated at the layberth. The CAPE HORN was tendered to Military Sealift Command at 1400 PDT on April 25, 1989. The total activation time was eight days, eight hours and 55 minutes. The following problems were experienced during the activation of the CAPE HORN: [Ref. 35]

1. Condition At Breakout

Contaminated fuel was discovered at the time of breakout. This problem is further discussed in section (2.) below.

2. Engineering

The only major engineering problems were contaminated fuel oil tanks for the ship service generators and salt water contamination of the main engine lube oil sump. These problems caused delays while the contaminated fuel oil and lube oil were removed and the systems replenished.

3. Crew

The full crew was aboard the vessel three days after the breakout began. The crew had little experience with the foreign built vessel and had to learn as they went along.

4. Workforce Resources Available For Breakout

a. Ship Manager

There was a problem with the ship manager not being familiar with the vessel or the contract. As the quick look report noted:

> The ship manager was not intimately familiar with the ship or the requirements of the ship manager contract. The activation was managed solely by one full-time port engineer on-site with the assistance of a consultant. As a result, planning and scheduling suffered and fatigue affected performance. [Ref. 35:p. 1]

b. Skilled Technicians

Skilled technicians with the experience necessary to work on important equipment were not available on short

notice. The technicians that were available were not familiar with the foreign built equipment and were unable to activate the vessel expeditiously. [Ref. 35:p. 2]

c. Shipyard Personnel

The shipyard was not completely prepared for the activation. The quick look report noted: "The activation ship repair facility has limited experience and personnel to handle the job efficiently [Ref. 35:p. 2]."

5. Parts And Stores

No significant problems in this area were encountered.

6. Bunkering

Delay in the activation process was caused by MSC's requirement that the vessel be bunkered full prior to sea trial. Delivery of the required fuels on short notice was a problem. Bunkering during the activation process took key personnel away from other activation work and added to the fatigue factor. [Ref. 35:p. 2]

7. Summary

The activation of the CAPE HORN was not completed within the five day time limitation. Even though delays were caused by inexperienced personnel from both the shipyard and the crew, the quick look report noted that it might have been possible for the activation to be completed on schedule if not for the unexpected engineering problems. [Ref. 35]

V. ANALYSIS AND RECOMMENDATIONS

This chapter will analyze the information previously presented and provide recommendations concerning prevention of problems encountered during activation of RRF vessels. The information in this chapter is divided into the same major categories as were used in Chapter III, condition at breakout, engineering, crew, etc. In each of these sections an overview of the problems encountered for that category is first presented, followed by a comparison of past and present activations and finally recommendations.

A. CONDITION AT BREAKOUT

1. Overview of Problems

It is no surprise that the better the condition of the vessel at the time of breakout, the easier it is to activate. The longer a vessel is in lay-up, the more its condition deteriorates and the longer it takes to activate it. In many cases, the initial condition of the vessels activated was not adequate to support activation within the required five day time limitation. If a vessel is in unsatisfactory material condition at the time of breakout, it is unlikely that it can be activated in five days even if a full crew is aboard at the time of breakout. A recurring problem was the unexpected deteriorated condition of gaskets and valve packing material

in the engineering spaces. This most likely was a result of the dehumidification process used to prevent corrosion during the lay-up period. In some cases a problem dating back to the last time a vessel was in service caused much delay to correct.

2. Comparison Of Past And Current Activations

Although some of the RRF vessels activated for Operation Desert Shield were in relatively poor condition, none were nearly as bad as the PRESIDENT when it was activated in January of 1985. The survey and inspection procedures in Phase IV appear to be able to keep vessels from becoming as deteriorated as the PRESIDENT was. The past activation of the CALIFORNIA showed that relatively few problems occur when activating a vessel that had just recently been operated for an exercise and was in good material condition. The activations of CAPE HORN, CAPE BORDA and CAPE BRETON were similar to the case of the CALIFORNIA in that they had all been activated for exercises within a year or two of the Operation Desert Shield activation and were in good condition.

The PRESIDENT was not only in very poor material condition when it was broken out, it also did not have a current COI. The present procedures for ensuring that each vessel maintains a current COI appear to be working as none of the Operation Desert Shield vessels had this problem.

3. Recommendations

The best way to keep the material condition of RRF vessels in sufficient state of readiness to meet five day activation times is to exercise them as often as possible and lay them up properly at the end of the exercise period. It is much easier to activate a ship that has recently been laid up after an exercise period than one that has been in lay-up for as long as five years. Exercising RRF vessels often will also keep crews trained in the operation of older or foreign-built machinery. Unfortunately, frequent activation of RRF vessels is cost prohibitive. Considering the current budget constraints, it is questionable whether MARAD will be able to meet its goal of activating each RRF vessel at least once every five years. It is therefore imperative that all of the vessels activated in support of Operation Desert Shield be properly laid-up when being deactivated at the completion of their operations.

Dried out gaskets and valve packing material in the engineering spaces was a major problem during the activations. The procedure for dehumidifying the engineering spaces should be reviewed to see if another method of lay-up might provide equal protection without damaging gaskets and packing material. If a method of laying up boilers could be found that does not require draining the boilers, this would be ideal. It would allow maintenance crews to periodically light off the plant and operate machinery without the tremendous

cost of lighting off and then laying-up a boiler that has been drained and dehumidified.

The ex-USNS vessels appear to have been in poorer condition when placed in the RRF than the other vessels. It might be helpful to allow MARAD to supervise the deactivation of USNS vessels rather than having MSC deactivate them and turn them over to MARAD on an as-is basis.

The condition of each vessel at the time of deactivation should be carefully documented by the crew that last operated it, and this information should be retained for reference by the next crew to man it. Special note should be made of any measures taken to keep marginal machinery operational as this will give the next crew a good idea of where to start trouble shooting when similar problems arise.

B. ENGINEERING

1. Overview Of Problems

At the outset of the breakout the major common problem was dried out gaskets and packing material. In some cases, most of the material had to be removed and replaced. This problem had to do with the initial condition of the vessels at the time of breakout, and was discussed above.

Engineering problems often occur unexpectedly and are very time consuming to repair. The CAPE DUCATO is an example of this. Since it has a diesel propulsion plant, the vessel had a maintenance crew that periodically operated the main

engines during the lay-up period. Although no problems were noticed during test operation, major problems with the fuel delivery system were discovered when the engines were placed under a load. These problems caused major delays in the activation process. Boiler casualties are also very time consuming to repair.

2. Comparison Of Past And Current Activations

Major engineering problems can cause a vessel to exceed the five day limit by a considerable amount of time. This was true of the PRESIDENT in 1985 when boiler casualties contributed to a 71 day activation time. This is similar to the activations in support of Operation Desert Shield where boiler problems contributed to a 14-day activation on the COMET, and fuel delivery problems for the main diesel engines contributed to a 14-day activation on the CAPE DUCATO.

3. Recommendations

The better the condition an engineering plant is in, the less likely unexpected problems will occur. Proper maintenance during the lay-up period can help prevent major engineering problems when the vessel is activated.

The only solution to problems that cannot be found during maintenance operations is to have crews that are knowledgeable and have experience with that particular engineering plant. These experienced engineers usually will be able to expeditiously remedy the problem.

C. CREW

1. Overview Of Problems

The main problems with the crews for the vessels activated are that they either arrive late in the activation process or are inexperienced with the vessels' equipment and machinery. The problem of inexperience with the equipment and machinery is especially important in the case of foreign-built diesel vessels. These problems often cause the activation to exceed the five day limit.

The Chief Engineer and a third mate were on the maintenance team of CAPE DUCATO for a year before it was activated for Operation Desert Shield. They had a lot of knowledge of the foreign diesel plant at the time of activation. This was very helpful at first, but unfortunately it was not helpful when the vessel developed problems under a full load.

2. Comparison Of Past And Current Activations

The past activations studied do not mention any crew problems except for the 1989 activation of CAPE HORN. During that activation the same problems of the crew reporting late and being inexperienced with the foreign built ship were noted.

3. Recommendations

The engineers who will man the RRF vessels must get experience operating these older or foreign-built vessels.

This can be done on the diesel vessels by having them work on the maintenance teams during lay-up. The ship managers should also have engineers train on the foreign-built vessels during lay-up to give them needed experience.

D. WORKFORCE RESOURCES AVAILABLE FOR BREAKOUT

1. Overview Of Problem

The diminishing United States shipbuilding industry has led to a decline in the workforce resources available to work on RRF vessels when they are activated. This problem is compounded when several vessels are activated simultaneously as they were in support of Operation Desert Shield. Also very few resources are available that have any experience at all working on the foreign-built diesel vessels.

2. Comparison Of Past And Current Activations

During the simultaneous activation of the PRESIDENT, CALIFORNIA and NORTHERN LIGHT in 1985 it was noted that there was a problem with limited resources during a simultaneous breakout.

3. Recommendations

The foreign diesels should be activated whenever feasible to familiarize shipyard personnel with the foreign-built equipment and machinery. The ship managers should also be required to train resources on these foreign vessels so that they will have experience on them when they are broken out.

E. PARTS AND STORES

1. Overview Of Problem

At the time of breakout the vessel is required to have enough spare parts and supplies aboard to support operations for 180 days. MSCPAC inspectors noted that in many cases supplies and parts were extremely short of the required amount [Ref. 16]. In some cases when the vessel is broken out there is no inventory so the crew does not know what parts are available or where they are located. Spare parts are often used during the activation phase and are not replaced before the vessel leaves for its voyage. Some parts and materials for the foreign vessels were not available in the United States and had to be shipped from Europe.

2. Comparison Of Past And Current Activations

The only mention of parts and stores in the past activation reports was from the CAPE BORDA. This report stated that a programming system needed to be developed for spare parts at hand.

3. Recommendations

An inventory of spare parts and supplies should be taken well in advance of a vessel being activated. This inventory should be conducted when the vessel is placed in lay-up so that parts can be obtained and placed aboard in order to be ready for activation. When it becomes necessary

to use on-board spares during the activation phase, they should be replaced as quickly as possible.

F. BUNKERING

1. Overview Of Problem

During the RRF activations in support of Operation Desert Shield, MSCPAC required that the vessels be bunkered full prior to sea trials. This requirement takes crew members away from other activation jobs and adds to the fatigue factor in the activation. MARAD representatives stated that in the past a verbal agreement between MARAD and MSCPAC had required only that the vessel carry sufficient bunkers to complete sea trial [Ref. 17].

2. Comparison Of Past And Current Activations

The requirement to bunker the vessel full prior to sea trial was not mentioned in the past activations studied until the activation of CAPE HORN in 1989. The CAPE HORN activation mentioned the same problems of the crew being taken away from other activation jobs and adding to the fatigue factor.

3. Recommendations

Bunkering full prior to sea trial appears to interrupt the activation activities and add another burden to an already weary crew. The possibility of bunkering when the vessel is loaded out prior to voyage should be considered whenever possible to allow the activation to proceed as smoothly as possible.

G. Summary

It would be beneficial if representatives from all of the parties involved in the activation of each vessel were to get together and discuss the problems encountered during the activation. This meeting should take place as soon after the activation is completed as possible so that it is fresh in everyone's mind. This meeting would be beneficial in avoiding similar problems in the future, especially if the information is documented and widely disseminated.

APPENDIX A: ABS SURVEY REQUIREMENTS

Status Sheet Symbol	Surveys	Frequency
6102686	A.B.S. Identification Number: The first two digits represent the year the vessel was built.	
AHS	Annual Hull Survey: To be made within 3 months either way of each anniversary date of the crediting of the previous Special Survey of Hull or original construction date.	Annual
AMS	Annual Machinery Survey: To be made within 3 months either way of each anniversary date of the crediting of the previous Special Survey of Machinery or original construction date.	Annual
ALLI	Annual Load Line Inspection: Complete within time frame of three (3) months before or after the load line anniversary date.	Annual
INT	Intermediate Survey: Complete approximately two and one half (2½) years after each Special Survey	Every two & one half (2½) Years
SAS	Special Annual Survey: To be made within 3 months either way of each anniversary date of the crediting of the previous Special Survey of Machinery or original construction date.	Annual
DD	Drydock Survey: Out of water inspection maximum ten (10) years under certain conditions as per Agreement.	Five or Ten Years Two & one half (2½) Years (see note)
PWTB SWTB AXWHBS AXWTBS	Port and Starboard Watertube Boiler Survey: Complete on or about due date Auxiliary Waste Heat and Auxiliary Water Tube Boiler Survey	Every two & one half ($2\frac{1}{2}$ Years (for vsls fitted w/more than boiler)
YGS	Year of Grace Survey: Complete by due date of the Special Survey	

(Taken from Ref. 8)

SSH	Special Periodical Survey Hull: Complete within four (4) years after crediting date of previous Special Periodical Survey Hull. NOTE: If the Year of Grace Survey is satisfactorily completed about the time that the SSH is due the completion of the Special Survey Hull may be deferred for a period not exceeding twelve (12) months, providing the whole Special Survey is satisfactorily completed within five (5) years from the crediting date of the previous Special Survey Hull.	Every four (4) Years (see note)
SSM	Special Periodical Survey Machinery: Complete within four (4) years after crediting date of previous Special Periodical Survey Machinery. NOTE: The "Note" under SSH applies.	Every four (4) Years (see note)
CMS	Continous Machinery Survey: Complete Special Survey Machinery within five (5) year span. RRF vessels on Continuous Machinery Survey must complete all due items before or at reactivation.	Five (5) Year span
nternational oad Line ertificate	International Load Line Certificate: Complete survey by due date. Vessels under twenty (20) years old are issued five (5) year Load Line Certificates. Vessels over twenty (20) years old are issued four (4) year certificates. After a Special Periodical Survey is completed a five (5) months provisional load line certificate is issued pending issuance of full term certificate by ABS/HQ. RRF vessels that are on Special Annual Survey Status are issued International Load Line Certificates valid for one (1) year.	Five (5) Year
TS	Tailshaft Survey - Continuous Liner/Water Lubricated Bearings: Tailshafts fitted with continuous liners to be drawn at least once every three (3) years for single-screw vessels and four (4) years for multi-screw vesels. On single-screw vessels with tailshafts having continuous liners the examination may be extended to five (5) years when requested by Owner provided certain conditions noted in Rules are met.	Three (3) Year single screw Four (4) Year multi-screw
	Oil-Lubricated Bearings: Tailshafts with effectively sealed oil-lubricated bearings may be drawn on five (5) year survey intervals provided conditions	Five (5) Year

aken from Ref. 8)

	noted in Rules are met. A further extension of one (1) year may be considered when requested by Owner provided conditions noted in Rules are met.	
	NOTE: In the case of RRF vessels whose tailshafts were drawn and surveyed during deactivation or in lay-up and found or made satisfactory and are specially prepared for lay-up in accordance with MARAD's established procedures the Tailshaft Survey interval will be ten (10) years. For other shafts not eligible for ten (10) year survey intervals, the the propeller shaft survey due date may be deferred up to the next due Drydocking in consideration of the lack of use. This assumes that the stern bearing clearance is satisfactory and the externally visible part of the stern bearing assembly is found in order by a diver during the reactivation inspection.	
Gaugings	Gaugings must be taken at maximum of five (5) year intervals for the due Special Periodical Survey and as otherwise required by ABS Surveyor.	Every five Years (maximum)
SLC	Safety Construction Certificate: Issued upon completion of the Special Surveys of Hull and Machinery for a period of five (5) years (the due date of the next Special Surveys plus the Year of Grace). On vessels where the due daes of the Special Surveys of Hull and Machinery do not coincide, the SLC is issued to the due date of the earlier Special Survey.	Five (5) Year
	RRF vessels that are on Special Annual Survey Status are issued Safety Construction Certificates valid for one (1) year.	
SLC/MAS	Mandatory Annual Survey for Safety Construction to be made within 3 months either way of each anniversary date of the crediting of the previous Special Survey of Hull or original construction date.	Annual
ACG	Annual Cargo Gear Survey: Complete by due date.	Annual
QCG	Quadrennial Cargo Gear Survey: Complete by due date or at time of reactivation.	Every four (4) Years

(Taken from Ref. 8)

APPENDIX B: USCG INSPECTION REQUIREMENTS

Unless the system/element is modified below, the inspection interval shall be as prescribed in the appropriate USCG regulations.

INSPECTION INTERVALS FOR RRF VESSELS

Inspection	Applicable USCG Rule*	Normal Interval	Modified Inspection Interval
Boiler Hydrostatic Test	61.05-10	4 years	At 4 year intervals but may be extended to Phase V break-out.
Boiler Safety Valve Test	61.05-20(a)	2 years	At each inspection for certification but may be extended to Phase V break-out.
Boiler Valve Examination	61.05-15(a)	4 years	During Phase II open and exam boiler valves; thence at 4 year intervals but may be extended to Phase V lay-up.**
Remove and Examine Boiler Mountings and Studs	61.05-15(b), (c)	8 years	During Phase II, examine mounting and replace studs; thence at 8 year intervals but may be extended to Phase V lay-up.**
Pressure Vessel Examination	61.10-5(a),(b)	2 years	Prior to placing in service but not less than 2 years after it was last examined/hydroed.
Pressure Vessel Relief Test	61.10-5(i)	2 years	At each inspection for certification but may be extended to Phase V break-out.
Steam Piping Hydro	61.15-5(a),(b)	4 years	At 4 year intervals but may be extended to Phase V break-out.
Steam Piping Safeties Test	61.15-5(c)	2 years	At each inspection for certification but may be extended to Phase V break-out.
CO_2 Bulk Storage Tanks Hydrostatic Test	61.10-5(g)	8 years	At 8 year intervals but may be extended to Phase V lay-up**

ıken from Ref. 7)

	Inspection	Applicable USCG Rule*	Normal Interval	Modified Inspection Interval
10.	Inflatable Liferaft Servicing	33.25-15(d) 91.25-15(a)(6)	1 year	Approved and serviced equipmer to be provided during Phase V/
11.	Inflatable Liferaft Hydraulic Release Servicing and Testing	33.25-15(e) 91.25-15(a)(8)	1 year	As in item 10 above.
12.	Portable CO_2 Extinguisher Cylinder Test	147.60 49 CFR 173.34	5 years	As required by USCG rule.
13.	Fixed CO_2 Extinguisher Hydro	147.65	12 years	During Phase II; thence at 12 year intervals but may be extended to Phase V lay-up**.
14.	Cargo Gear Examination (Visual)	31.37-1(b) 91.37-1(b)	1 year	Prior to operation of gear but not less than 1 year after pri examination.
15.	Cargo Gear Dismantling and Proof Load Testing	31.37-1(d) 91.37-1(d)	4 years	During Phase II; thence at 4 year intervals but may be extended to Phase V lay-up**.
16.	Cargo Ship Safety Equipment Certificate	31.40-10 91.60-10	2 years	As required by USCG rule.
17.	Cargo Ship Safety Construction Certificate	31.40-5 91.60-5	5 years	As required by USCG rule.
18.	Cargo Ship Safety Radio-telegraphy and Radiotele-phony Certificates	31.40-15,20 91.60-15,20	1 year	As required by FCC.
19.	International Oil Pollution Prevention (IOPP) Certificate	MARPOL 73/78	4 years (tank-ships: various)	As required by MARPOL 73/78.
20.	Ring Bouy Self-activating Smoke Signal	33.40-5(c) 94.43-10(c)	3 years	If maintained on board, as required. Otherwise, up-to-da equipment to be provided in Phase V break-out.
21.	Red Flare and Orange Smoke Distress Signals	33.45 94.90	3 years	Same as 20 above.

Taken from Ref. 7)

Inspection	Applicable USCG Rule*	Normal Interval	Modified Inspection Interval
Internal Structural Examination	31.10-21 91.40-3	2.5 years	As required by USCG rule.
Fuel Oil Tank Inspection	31.10-24 91.43-1	5 years	At 5 year intervals, but may be extended to Phase V lay-up**
Tailshaft Drawing	61.20-15	5 years (for fresh water)	At 5 or 10 year intervals (see note)
Drydocking	31.10-21 91.40-3	5 years (for fresh water)	At 5 or 10 year intervals (see note)

Note: 1. All vessels are required to be drydocked after 3 years accumulated activation time (phase V breakout plus phase O time).
2. Ten year interval: If properly prepared as described in Annex II, and provided activation time does not exceed three years in 10, a vessel will be drydocked at 10 year intervals minius activation time. Vessels in the 10 year program must satisfactory complete an underwater survey at year 5 as described in Annex II.
3. Five year interval: If a vessel is not properly prepared, as in 2 above, it will be drydocked at a 5 year interval

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* Title 46 Code of Federal Regulations unless otherwise noted.

** Tests and/or inspections which are extended to Phase V lay-up shall be completed not later than six months after vessel enters Phase O if operation phase is six months or longer.

aken from Ref. 7)

APPENDIX C: RRF ACTIVATION HISTORY

VESSEL	GEN AGENT SHIP MGR	VERIF/ OUTPORT	TYPE OF ACTIVATION	ACTIVATION COMMENCED	ACTIVATION TASK	DAYS TO ACTIVATE	ACTIVATION COMPLETED/ START OPS	DAYS OPS	OPERATIONS OSK	OPERATIONS AREA	LAYUP OPS REACTIVAT	DE ACT COMMENCED	DE-ACT TASK	DE-ACT DAYS	DE-ACT 2ND DRF	REMARKS
1 WASHINGTON	GUDSON	BAY	SERVICE	09/23/71	R/A - DEL 01 BSC	0	10/08/71	23	OTHOUGLH 32	ADEHEDDAAEH	11/10/17	11/18/71	TUDD, BOLA	95	02/12/20	
2 PRIDE	BOBRAC	JBBE	RO NOTICE	05/01/78	GUDSOIPCO	10	05/11/78	0	SEA TRIAL OBLT		04/11/78	05/14/78	GUDSOIPCO	36	06/20/28	
2 BAIBE	ORI	BRF	SERAICE	11/78/18	CULUMBA'S	28	12/18/18	01	DAPUDCAH 09	BHAMEDDAYAH	03/15/19	03/28/79	COASTAL BARIBA	20	06/01/28	
1 WASHINGTON	GUDSON	BAP	RO NOTICE	17/05/78	COASTAL HARIBE	8	17/11/78	1	SEA TRIAL OBLE		12/17/78	07/03/79	COASTAL BARIBO	64	07/16/29	
5 WASHINGTON	BUDSON	BAF	SERVICE	07/24/88	AEBDEO	26	08/15/88	22	BEOUNGEO/TTAAWUBA	AOEMEDDAYEH	10/16/86	10/26/88	ZUDD, BULA	89	03/27/01	
6 LINCULN	APL	SUBF	RO NOTICE	08/13/80	TUDD, ALAMEDA	4	08/16/80	14T	PRIBLE2 01		01/10/01	01/10/01	ZRIPLE A, SIO	32	02/12/01	
7 CATAWBA VICTORY	APE2	JBAF	RO NOTICE	07/16/81	BORSOIPCO	6	01/22/81	1	SEA TRIAL OBLT		01/23/01	01/23/01	BORSOIPCO	29	08/21/01	
8 WASHINGTON	ORI	ABP	RO NOTICE	03/16/81	COASTAL HARIBE	6	01/22/81	0	SEA TRIAL OBLT		07/22/01	07/27/01	COASTAL HARIBE	124	11/24/01	
9 PRESIDENT	APL	SBAF	RO NOTICE	07/16/81	TRIPLE A, SFO	8	01/24/81	0	SEA TRIAL OBLT		01/24/01	07/24/01	ZRIPLE A, SFO	32	08/25/01	
10 OHIO	ORI	JBAP	RO NOTICE	02/16/82	HOUR ERCIBEEBIBG	5	02/21/82	24	CALLAOT EAGLE 02	LUBC BEACH,CA	05/46/82	05/07/82	BUBSAIPCU	68	01/15/82	
11 LONE STAR HARIBER	PARAELL	JBAF	RO NOTICE	09/02/87	BUBSOIPCO	14	09/12/82	39	BEBCOGEO 02	AOEMEDDAYTH	10/71/82	10/22/82	HARYLAND SOIP	61	12/22/82	
12 CAPZ ALEZANDEO	AR FOB	JBBY	RO NOTICE	07/14/83	BORSOIPCO	14	01/14/83	64	BOB CARGO LIE2	A EUROPE,BURDUBAS	09/26/83	09/26/83	BORSOIPCU	52	11/12/83	
12 CALIFORNIA	APL	SBAF	RO NOTICE	09/07/83	STRAICE ENGINEERING	5	09/12/83	57	BOLB EAGLE-83	PENSACOLA	11/08/83	11/08/83	ZRIPLE A, SFO	30	12/08/83	
14 PIONEER CRUSADER	USL	BAF	RO NOTICE	02/08/81	COASTAL HARIBE	2	02/15/84	64	BUB CARGO LI92	A EUROPE,BURDUBAS	04/43/84	04/03/84	ALABAMA O/O/COA	169	09/19/84	
15 BETSTORE STATE	IOR	JBBF	SERAICE	04/25/84	R/A-DEL AFTER CONV.	0	04/25/84	176	JLOTS 13	CAPE HENRY, AA	10/12/86	10/15/81	CAEATOAB ABBE2	1	10/16/86	
16 HASRIACZOA	ORI	BRF	RO NOTICE	05/29/84	COASTAL HARIBE	10	06/08/84	2T	ABAOS 2BBA	BURDUBAS	06/25/84	06/27/84	ALABAMA O/O/COA	211	01/24/85	
17 CAPE ANN	AR FOB	JBBP	STRVICE	08/22/84	BORSOIPCO	19	09/10/84	36	JLOTS 13	CAPE HENRY, AA	10/16/86	10/16/84	BUBSOIPCO	35	11/20/84	
18 BAIBE	ORI	BAP	RO NOTICE	01/02/85	COASTAL HARIBA	9	01/13/85	53	BINDLE LIBERTT	BURDUBAS	03/45/85	03/05/85	COASTAL BARIBO	85	05/09/85	
19 CALIFORNIA	APL	SBAI	RO NOTICE	04/29/85	STRVICE ARCIBEEBIBG	8	01/02/85	78	ZEAN SPIRIT 85	BUBEA & JAPAN	04/01/85	04/23/85	TRIPLE A, SFO	47	06/11/85	
20 BORTAERN LIGAT	APL	SBBF	RO NOTICE	03/29/85	ZODD, SAN FRAN	5	01/03/85	72	ZEAN SPIRIZ 85	BUBEA & JAPAN	04/16/85	04/16/85	TRIPLE A, SIO	23	05/09/85	
21 PRESIDENT	APL	SBBF	RO NOTICE	01/29/85	TRIPLE A, SAN FRAN	31	04/10/85	T	SEA TRIAL OBL2		04/31/85	04/11/85	ZRIPLE A, SFO	27	05/02/85	
22 BATTLESBUAC VICTOAT	AR POB	BBBF	CONGRESS	02/22/85	TODD-GAL, B.S B.	101	06/03/85	62	CABABAS 85	BURDUBAS	07/15/85	07/22/85	OEAUROAT OF	0	01/22/85 S2, BUB BBF	
23 AMERICAN VICTORI	AR /OB	BBAF	CONGRESS	03/14/85	BORSOIPCO	51	05/10/85	0	SEA TRIAL OBL2		05/10/85	05/24/85	EASKZOR ZTCO	35	06/21/85 S2, BUB BBF	
24 SOUTHERN CROSS	IOR	JBAF	STRVICE	03/01/85	R/A-DTL AT BSC	0	03/01/85	148	BEOLOGIO 05	BSEC, BTOIZEAAABIAO	06/17/85	06/17/85	HOUR ERCB	36	07/21/85	
25 ATTSTORE STATE	IOR	JBBF	STRVICE	04/08/85	0 07010	6	04/14/85	10	AISUTT BIACO	US GULF	08/24/85	08/24/85	SHIP'S CRAW	13	09/06/85	
26 BRASTORE STATE	IOR	JBBP	SERVICE	09/16/85	B AEOTO	5	09/11/85	85	BULA ZACLA 05	PENSACOLA, FL	11/25/85	11/25/85	SHIP'S CRAW	0	11/25/85	
27 ADVENTURER	BTL	JBAF	TRAINING	01/01/86	BURSOIPCO	13	01/20/EG	0	OUCA TRIAL OBLT		01/28/86	01/21/86	BURSAIPCO	0	01/01/86 S2	
28 CAPE DUCATO	BARBER	BALT	SARVICE	07/24/86	DLTA STEEL, S P	5	01/29/48	83	TEAM SPIRIZ 86	BUBEA	01/TT/88	04/23/86	TUDD, SAN PEDRO	44	08/06/86	
29 CAPE BOB	APL	SBAF	RO NOTICE	07/18/86	BESTWARDS, SAN FRAN	5	07/23/86	54	ZEAN SPIRIT 86	BUBBA	04/18/88	04/29/86	CURT HARIZIHL	26	05/22/88	
28 CAPT DECISION	BARBER	BALZ	RO NOTICE	02/25/87	ATTO STEEL, S.P.	5	07/07/86	133	ABAUS TABA 86, 43	BURD, PR.USEC-WC	08/22/86	08/22/88	BUBUABER S/T	87	11/17/86	
31 PATAIOT STATE	IOR	BRA	STRVICE	09/08/86	0 AEOTA	5	09/13/E6	0	SPECIAL OPS	BA CAPTS OPARBA	09/23/86	09/21/86	BAEBTO, BBA	2	09/23/86	
32 CAPE DOUCLAS	BARBER	JAI	STRVICE	12/01/86	BOATH FLORIDA ST	4	12/09/86	242	ALATING ZBAILS, 45	BURD,EGTPT,B EUROPE	13/16/81	13/16/81	BUATH EL ST	125	03/28/88 ST	
33 PIONEER CONTRACTOR	IOR	BAF	RO NOTICE	01/16/87	COASTAL HARIBE	14	01/24/87	91	TEAM SPIRIT 87	BUBEA	04/26/87	04/26/87	BOBSTUB S.B.	129	09/02/87	
34 CAPE BOAB	BARBER	BCBF	SERAICE	01/14/87	HOOR ENGINEERING	9	01/23/87	122	TEAM SPIRIT 87	BUBEA	05/25/87	06/29/87	OLATB&ATB, SFO	73	09/10/87 S2	
35 CAPE BOADA	APL	BICB	RO NOTICE	01/26/87	SERAICE ENGINEERING	5	01/31/87	63	ZEAN SPIRIT 87	BUBEA	04/02/81	01/02/87	OLTOTA,ZAIF A	127	08/07/87	
36 CAPE HUDSON	BARBER	JBAP	SERVICE	06/17/87	HOOR TRAINEBAING	15	07/01/87	24	AAICRT STAR 87	EGTP2	09/14/81	09/14/87	HUOR ERCA.	68	10/30/87 S2	
37 CAPE ORDAB	BARBER	JBAF	SERVICE	06/19/81	HOOR TRCINEERING	15	07/01/81	79	BRICRT STAR 87	ECYP2, JORDAN	09/71/81	09/21/87	BUOR ERCA	38	10/29/82	
38 EMPIRE STATE	IOR	SUBTRC	SERVICE	08/03/87	0 OTOTA	4	08/07/81	5	SPICIAL OPS	BA CAPES OPARIA	08/14/81	08/14/81	OAEBTO, SUBERC	3	08/17/87 S2, BUB BAE	
39 CAPZ AEZTON	APL	AUBT PT	RO NOTICE	09/09/81	B AIAIA	5	01/14/87	9	SPECIAL OPS	CAMP PENDLETUR,CA	09/23/87	09/25/87	TUDD PACIFIC	122	01/25/88	
40 EMPIAZ STATE	IOR	SUBTRC	SERVICE	12/23/87	B AEOTO	14	01/06/88	0	SPECIAL OPS	AA CAPES OPARBA	01/10/88	01/11/88	BAEATA, SUBERC	1	01/12/88 S1, BUB BAI	
41 CAPE EDMONT	BARBER	POAT	SERAICE	02/01/88	0 ATATO	0	02/04/88	4	ACT CANCELED BY BSC					0		
42 CAPE DUCATO	BARBER	SAB FED	SERVICE	02/11/88	A OIATO	11	02/25/88	25	TEAM SPIRIZ 88	BUBEA	05/18/88	05/16/88	SW HARIBE	116	01/10/89 ST	
43 WRIGHT	IOR	FAIL	SERVICE	04/06/88	0 OEAIO	5	04/11/88	11	OCZAN VIBIBOE 88	ASEC-BUDSEAELT ADS	04/25/88	01/25/88	OBEOTO, POILO	36	05/21/84 S2, BUB BBF	
63 PATAIOT STATE	IOR	BRA	SERAICE	05/13/88	B AEOTO	6	04/19/88	6	SPECIAL OPS	AA CAPES OPARBA	06/25/88	06/25/88	OBEOTO, BRA	1	06/25/88 S2	
65 CAPE HORICAR	ORI	BOLA	SERVICE	01/05/88	B AEOTO	11	01/TT/88	17	LUCIA 88	PT STUBT, AA	09/42/88	09/06/88	HOUR ERCA	52	10/20/88 S2	
66 GOPHER STATE	IOR	BOAF	SERVICE	01/22/88	0 AIOTO	19	08/10/88	21	LUCE3 88	IT STUBT, AA	08/11/88	08/31/88	HAOTO CREAT A2.	85	10/15/84 S2	
61 CAPE DIAMOND	BTL	AT	SERAICE	08/01/84	AMZATECA, S.I.	17	08/10/88	7	OPS ATOOTED, BSL OIS	ON 09/10/88	08/25/88	10/10/88	AMEATECO, S.I.	52	12/09/84 S2	
68 AMERICAN OSPATT	AR POB	BBP	SERVICE	08/03/88	0 AEATB	2	08/10/88	23	LUCE2 88	12. STOAT, AA	09/02/88	09/14/88	MASUR CUBS2.	89	12/12/88 S2	

REMARKS

B - - DIFFERENCE BAT EXIST FROM TENDERING TO OPS COMMENCEMENT
ST - - STRAICAT TIME ACTIVATION
BOB BBF - - BOB BBF ACTIVATION

CONGRESS - - ACTIVATION AT BIDDEST OR CLASSIS
0 OEATA - - ACTIVATION CONDUCTED BY CEBIBAL AGENT/SHIP MANAGER
WITH CREWS FROM ENTERPRISE COMPANY OF OPERATORS

VESSEL	CEN AGENT SHIP AGT	FLEET/ OUTPORT	TYPE OF ACTIVATION	ACTIVATION COMMENCED	ACTIVATION YARD	DAYS TO ACTIVATE	COMPLETED/ START OPS*	DAYS UPS	OPERATIONS R.I	OPERATIONS USE	OPERATIONS AREA	FINISH OPS DELIVER	RE-ACT COMMENCED	RE-ACT YARD	RE-ACT DAYS	RETURN TO RRF	REMARKS
CAPE AUKICAN	UNI	JBUD	SERVICE	04/11/89	AUKUN SEWELLS POINT	19	05/06/89	30	SOLID SHIELD		N C AND CAPES OPAREA	06/13/89	06/13/89	STEVENS TECH	79	08/17/89	ST
CAPE BORN	ICY	BURT PT	NO NOTICE	02/11/89	N BERTH	0	04/15/89	03	CHROM GOLD '89		THAILAND	07/11/89		PENDING AWARD			
FLICKERTAIL STATE	IOR	JBUD	SERVICE	05/01/89	N BERTH	16	05/11/89	23	SOLID SHIELD		N C AND CAPES OPAREA	06/05/89	06/10/89	AUKUN COVAT AE.	30	07/10/89	ST
CURTISS	ANSEA	P BEURRE	SERVICE	08/07/89	N BERTH	20	08/11/89	62	PACEY 89		CA OPAREA	10/20/89	10/10/89	CBC PT HUENEME			ST, HUN RRF
AMERICAN OSPREY	AM FOU	BKF	SERVICE	08/16/89	COASTAL MARINE	10	04/14/89	35	DISPLAY DETERM B-89		OPDS AR CAPES OPAREA	09/30/89	10/03/89	COASTAL MARINE	120	02/10/90	ST
CAPE DURINGO	NTL	JBUD	NO NOTICE	08/21/89	AUKUN ENGINEERING		ANCHED		BRIGHT STAR 90		EGYPT			PENDING BIDS			
CAPE DIAMOND	NTL	JBNF	NO NOTICE	08/25/89	AUKUN ENGINEERING	5	08/30/89	13	DISPLAY DETERM B-89		TURKEY -- CANCELLED	09/17/89	09/12/89	BOTH-PHILT SHIP	180	12/11/89	
CAPE HENRY	IOR	JBNF	NO NOTICE	08/30/89	HUDSHIPCO	5	09/04/89	305	BRIGHT STAR 90		EGYPT	17/22/89	01/08/90	OLYMPIC MARINE		(E)3/10/90	
CAPE HENDOCINO	ONI	BIOLET	NO NOTICE	09/08/89	DIXIE MACHINE	5	09/13/89	70	DISPLAY DETERM B-89		9A CAPES OPAREA	10/03/89	02/15/90	PENDING AWARD			
CAPE HUDSON	IOR	JBUD	NO NOTICE	09/12/89	HUDSHIPCO-BENDLEY	2	09/16/89	84	BRIGHT STAR 90		EGYPT	17/09/89	17/14/89	ULTRIC MARINE			
CAPE INSCRIPTION	LTERS	VIOLET	NO NOTICE	09/19/89	DIXIE MACHINE	8	10/05/89	69	BRIGHT STAR 90		EGYPT	12/13/89	N/A	-- SELECTED FOR ACTIVATION			
CAPE INSCRIPTION	LTERS	MOBILE	SERVICE	01/03/90	N BERTH	2	01/01/90	14	PUERTES CABINO 90		HUNDUBAS	01/21/90	01/12/90	ATLANTIC MARINE		(E)3/11/88	

MARKS

- - DIFFERENCE HAS EXIST FROM TENDERING TO OPS COMMENCEMENT
- - STRAIGHT TIME ACTIVATION
N RRF - - NON RRF ACTIVATION

CONGRESS - - ACTIVATION AT REQUEST OF CONGRESS
N BERTH - - ACTIVATION CONDUCTED BY GENERAL AGENT/SHIP MANAGER WITH SHIP'S CREW AND INDUSTRIAL SUPPORT AS REQUIRED

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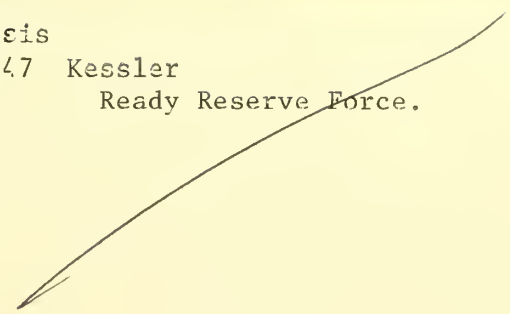

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